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The Studies in Social Policy Program of the Institute for Research on Public Policy is directed by Shirley B. Seward. The Program involves research on the interrelationships among demographic, economic and social trends in Canada. The research focus is in four areas: (1) the role and impact of immigration; (2) the economic and social implications of demographic change, including the aging of the population and the changing role and status of women; (3) social policy, including income security issues; and (4) the challenges of labour adjustment.

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PREFACE

COLLABORATIVE RESEARCH PROGRAM
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This study was undertaken as a component of the Collaborative Research Program organized by Statistics Canada and the Institute for Research on Public Policy. Under the terms of this Program, which was launched in 1988, Statistics Canada contributes special Census data, as well as other data required for approved projects. Several professional staff members of Statistics Canada are also providing their time as researchers within the Program. The Institute for Research on Public Policy is responsible for the management of the Program, is contributing the time of in-house researchers to conduct a number of the projects, and is providing stipends and research support to external researchers. The Institute is also responsible for disseminating the results of the research projects.

Considerable financial resources from the private and public sectors have been mobilized in support of the Collaborative Research Program. Status of Women Canada has provided support since 1988 for the overall Program. The Donner Canadian Foundation is supporting a number of projects in the area of immigration, as part of its broader support to IRPP's Social Policy Program for immigration research. Health and Welfare Canada and the Canada Mortgage and Housing Corporation are providing financial assistance for projects in the area of aging. And, the Canadian Labour Market and Productivity Centre contributed to this project on the demographics of employment.

The Statistics Canada/IRPP Collaborative Research Program illustrates the benefits of a program of co-operative research designed to assure the utilization of available data for policy analysis. The individual products of the Program, however, express the views of the authors, and do not necessarily reflect the views of Statistics Canada, IRPP, or the contributing departments and agencies.

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THE DEMOGRAPHICS OF EMPLOYMENT

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June 1991

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92-04718/

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SOURCE NOTES FOR FIGURES AND TABLES

Unless otherwise indicated, all figures and tables are based on special tabulations provided by Statistics Canada of data collected from one in five households using the "long form" of the questionnaires in the 1971, 1981, and 1986 population censuses. The exceptions are as follows:

Figure 2-1	–	historical series for 1951-89 are drawn from Statistics Canada Labour Force Survey sources; the series have been adjusted by the authors, as required, to put them on a consistent definitional basis; projected series are based on the use of the MEDS1 projection/simulation model (see Denton, Feaver, and Spencer, 1990)
Figure 2-2	–	see Figure 2-1 note
Figure 2-3	–	see Figure 2-1 note
Table 2-1	–	see Figure 2-1 note
Table 3-1	–	see Figure 2-1 note
Table 3-2	–	see Figure 2-1 note

FOREWORD

The project on which this study is based had its origin in some earlier work by Denton and Spencer (1987b, 1987c, 1987d). Based on 1971 and 1981 census data, it had been observed, among other things, that particular industries and occupations had developed quite unusual age distributions; moreover, there were instances in which the distributions had changed markedly between the two census dates. Further exploration of the demographic characteristics of employment seemed warranted, and with the help of Shirley Seward of the Institute for Research on Public Policy the new project was born.

We have benefited from a co-operative arrangement between the Institute for Research on Public Policy and Statistics Canada. This arrangement was conceived of and implemented by Shirley Seward of IRPP and Edward Pryor of Statistics Canada. Without such an arrangement the project would not have been possible. At our request, Statistics Canada provided a large number of special tabulations of data from the population censuses of 1971, 1981, and 1986, and our analysis has been confined largely to those tabulations. (The 1976 census was not included since it did not provide information on employment characteristics.) We are grateful to a number of individuals at Statistics Canada for their help in this connection, in particular Joan Coulter, Duncan Wright, and Michel Cloutier. At McMaster University we have been ably assisted by Christine Feaver and, at various times, Renqun Wang, James Koppang, and Guy Brockington. Gail Kalika provided word processing support. We should mention also how much we came to depend on electronic mail, which connected Denton and Spencer (who remained at McMaster) with Pineo (who moved to Vancouver Island when the project was in mid-stream). Even though we missed the opportunity for face-to-face discussions among the three of us, we were nevertheless able to exchange drafts of chapters and other material as easily as if we still shared the same building.

An extended version of this study is available from the McMaster University Program for Quantitative Studies in Economics and Population (QSEP). It appears as a QSEP Research Report under the title *Changing Patterns of Employment in Canada: Demographic and Social Factors*. As well as the material contained herein, the QSEP report includes three additional chapters: "Education and Earnings", "Birthplace and Language", and "Patterns of Part-Week and Part-Year Employment". Inquiries about the QSEP report should be directed to

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The study is concerned principally with changes in the age and sex distributions of industrial and occupational employment during the period 1971-86, as evidenced by the 1971, 1981, and 1986 censuses.

It begins, in Part I, by establishing the general setting within which the patterns revealed by the censuses should be viewed. The following points are of particular importance.

- The post-World War II period has witnessed rapid growth of the Canadian labour force.
- The factors associated with that growth are
  - immigration (especially in the 1950s);
  - more importantly, the long-term rise in female participation rates;
  - more importantly still, the coming of working age of the baby boom generation.
- The outlook is for much slower growth in the 1990s, and thereafter progressively slower growth and eventual decline.
- The trend towards slower labour force growth is widely shared among industrialized nations, including Canada's major trading partners.
- Slower labour force growth implies slower rates of growth of the gross national product, but not necessarily of income per capita.
- The age composition of the labour force is undergoing major change.
  - The baby boom generation lowered the average age when it entered the labour force and is now raising the average as it grows older.
  - The impact will be reflected in greater proportions of older workers in the future.
- Women have come to represent a larger fraction of the labour force; that fraction is expected to increase further, although the gains will be more modest than in recent decades.

- A cohort analysis of employment over the periods 1971-81 and 1981-86 indicates a continuation of the historical tendency for female age patterns to approach more closely those of men.

- As the age structure of the labour force continues to change, younger employees will have to be replaced by older ones; that will be true in the aggregate, but more especially in those segments of the economy that traditionally have relied on a supply of youthful workers to staff their operations.

Parts II and III involve detailed examinations of the 1971, 1981, and 1986 census data as they relate to industrial and occupational patterns of growth and of changes in the age and sex composition of employment. With respect to industries, the most noteworthy findings are the following.

- There has been strong growth of service industries generally, both in absolute and in relative terms. Thus the Canadian economy has become much more service-oriented, a pattern similar to that observed in other industrialized nations.

- The growth of the service sector has been unevenly spread.

  - There was relatively slow growth in transportation.

  - The overall growth in public administration and defence was about average but within that group the federal government's share declined while the shares of provincial and local governments increased.

- At the level of major industry groups, the most rapid growth occurred in financial and related services and in community, business, and personal services. At a more detailed level, the fastest growth of all was recorded by the computer service industry – 18 per cent per year between 1971 and 1986.

- Age and sex distributions differ markedly among industries.

- While there is a high degree of diversity across industries there is considerable stability over time in their individual age distributions, relative to the overall distribution: industries with younger-than-average work forces tend to remain that way, and similarly for those with older-than-average work forces.

- Women's employment has become increasingly concentrated in service industries.

  - The service sector's share of female employment went from 71 per cent in 1971 to 81 per cent in 1986.

- Employed women are younger, on average, than employed men, but the gap has narrowed.

- Although the 1971-86 period was one of substantial social and economic change there was considerable stability in the rankings of male/female proportions in the various industries.

- The tendency towards gender concentration greatly exceeds the tendency towards age concentration.

- There is a much greater concentration of female than of male employment among industries.

With respect to the occupational dimension of employment, the chief findings can be summarized as follows.

- Traditional "white collar" employment grew from 53 to 61 per cent of the total over the period 1971-86 while the share of "blue collar" occupations fell to less than one-third.

- The highest status occupations (managerial, professional, semi-professional and technical) accounted for 15 per cent of employment in 1971, 20 per cent in 1986.

- The fastest growth was in management occupations.

- Distinctive age distributions are found among the occupations, even at high levels of aggregation, and those distributions persisted over the period 1971-86.

  - There is greater differentiation according to age among occupations than among industries.

  - As with industries, the baby boom generation tended to disperse across occupations in such a way as to maintain relative age structures; however, the tendency to maintain age structures was greater for occupations, which suggests that to some extent industries reacted to the baby boom by changing their occupational composition.

- Professional, semi-professional and technical occupations appear to have spurned the baby boom; their age distributions were little affected.

- For men the rather high correlations between mean age and socioeconomic rankings of occupations suggest career sequences from lower to higher occupations; women do not show such a pattern.

- The census data convey an impression of considerable persistence in the occupational patterns of women despite the rapid growth in their labour force participation.

While most adjustments occur without particular reference to policy interventions, there is no doubt that such interventions can influence the course of events. Our analysis gives little in the way of specific policy guidance, but there are some observations that can be made relating to the problems associated with demographic changes.

- High concentrations of female workers in some industries and occupations constitute problems wherever they reflect social attitudes that preclude women from holding particular types of jobs.
  - For an individual, it means possible exclusion from more highly paid employment.
  - For society, it means a sacrifice of national product if some workers are precluded from working at jobs for which they are qualified.
- The problems associated with the age composition of employment are less clear but still important.
  - Those in declining industries with heavy concentrations of older workers would sometimes have difficulty finding alternative employment, but just how difficult would depend on the particular circumstance of the workers affected and on general economic conditions.
  - Industries and occupations that previously had heavy concentrations of younger workers may find it necessary to economize on the use of labour, especially youthful labour.
  - There may be problems associated with the increased proportions of workers in their middle years since their numbers alone reduce the prospects for promotion, with possible implications for employee morale.

PART I BACKGROUND AND BASIC TRENDS

CHAPTER 1: INTRODUCTION

This is a study of the demographics of employment – of the ways in which the age-sex composition of the work force and its various industrial and occupational components has been changing as the composition of the population has changed.

Continuing change is, of course, an inherent characteristic of the labour force. Industries grow or decline in response to technological developments, changes in the prices of the inputs they use, and changes in the demand for the products they produce.

Such changes result from the interplay of market forces and, in some cases, from the deliberate intervention of government. They are reflected in changing demands for labour, both in the aggregate and at the level of individual skills.

On the other side of the equation is the available supply of labour. It varies over time in response to the entrance of young workers and the exit of older ones, to the inflows of immigrants and outflows of emigrants, and to the other flows in and out that reflect labour market decisions by persons of all ages. As the age and sex composition of the labour force changes, so too do its educational and skill characteristics. Its occupational composition reflects the interaction of the demand for labour services with the available supply. Individuals move from one job to another, often changing their industries of employment, their occupations, or both. A typical worker may change jobs several times in the course of his or her working life.

Canada's labour force has grown rapidly throughout much of the period since World War II. Immigration has played a role in this growth, especially in the 1950s, and the continually increasing participation of women has been a major factor. With the influx of the baby boomers in the 1970s Canada achieved one of the highest overall rates of labour force expansion in the developed world. But by the latter part of the 1980s the time of rapid growth had come to an end. The 1990s promises to be a period of much slower expansion and the outlook for the early part of the next century indicates a further slowing down.

Behind this slowing down of growth is the remarkable decline in fertility rates – the so-called "birth dearth" that followed the baby boom. As smaller cohorts reach working age the overall size of the labour force will continue to grow, but more and more slowly (unless, of course, there is a massive and sustained influx of immigrants). In consequence we can anticipate that the average age of the labour force will rise substantially in the years ahead.

The changes that are in prospect raise many issues. How will aging affect productivity? Should immigration levels be increased sharply to offset the "shortage" of young workers? Are industries and occupations that already have "old" work forces likely to experience particular adjustment difficulties? Alternatively, are industries and occupations

with "young" work forces likely to experience difficulties? And what of the evolving role of women in the labour force: are their employment patterns coming to resemble those of men or do concentrations in particular occupations and industries persist? The purpose of this study is to provide a base of information and analysis that will be helpful in considering such issues.

The study is presented in four parts. Changes in the age-sex distribution of the labour force and employment at the aggregate level is the concern of the remaining chapters of Part I. Some attention is paid also to a variety of projections that suggest alternative possible futures.

In Part II the focus turns to industries. Firms within an industry have in common the production of closely related goods or services – e.g., the "fish products industry" includes "establishments primarily engaged in... processing fish, molluscs, or crustaceans" (Statistics Canada, 1970, p. 25), "wooden box factories" include "establishments primarily engaged in manufacturing wooden boxes and pallets, crates, fruit and vegetable baskets" (ibid., p. 27), "commercial printing" includes "establishments primarily engaged in the production of commercial and/or job printing..." (ibid., p. 28), and so on. In total, Statistics Canada defines 264 individual industries in the data with which we work. Hence each industry employs, on average, just under two-fifths of one per cent of the overall work force.

Who enters or leaves those industries as they expand or contract? Are older workers less likely to change jobs, and hence more likely to create an "adjustment problem" by being "trapped" in declining industries? Are the poorly educated less mobile? Are there significantly different patterns for men and women? Part of our concern is to document how the age-sex composition of employment in particular industries has changed, and to reflect on the implications of such changes.

While industries are defined by their product, occupations are defined by the types of work performed by individuals. Thus production within an industry typically involves a variety of human skills and activities. A single industry (e.g., hospitals) may engage some individuals with little skill or training (dishwashers, orderlies) and others who are highly skilled (physicians, nurses), all involved in producing the output of the given industry (hospital services). Statistics Canada has defined many more occupations than industries – 484 in the coding scheme that we use. Hence, at the most disaggregated level, each occupation employs only about one-fifth of one per cent of the overall work force, on average. Occupations, by their very nature, involve more homogeneous groupings of individuals than do industries. Part III of this study focuses on occupations – and especially on the ways in which their age-sex compositions have changed.

The study concludes in Part IV with a summary of the major findings and some final observations.

CHAPTER 2: LABOUR FORCE GROWTH: BACKGROUND AND PROSPECTS

Canada's labour force has grown from one decade to the next at least since the middle of the 19th century, the earliest period for which estimates are available. The rate of growth has varied from less than 10 per cent in the final decade of that century to almost 50 per cent in the first decade of the present one. Growth has been particularly rapid since World War II; from the early 1950s to the early 1980s it averaged about 2½ per cent per year. (Further discussion of historical labour force growth is provided in Denton, Feaver, and Spencer, 1980, and Denton, 1970.) The future situation promises to be much different: rates of labour force growth have fallen off in recent years and are predicted to decline quite sharply over the next twenty years, and then to turn negative. That is to say, the labour force itself will actually start to shrink in size by the second or third decade of the 21st century.

The purpose of this chapter is to discuss the major features of this transition from rapid growth to future zero growth and decline. The transition is of interest in its own right, but in the context of the present study it is important as a backdrop to the recent changes that have occurred in the age-sex composition of the labour force and its industrial and occupational distributions.

The Aggregate Labour Force: 1951-1986

The upper part of Table 2-1 provides summary information about the labour force at five-year intervals over the period 1951 to 1986 – its size and rate of growth, shown separately for men and women, as well as in total. As already noted, this was a period of rapid growth: the labour force more than doubled, increasing from 5.3 million to 12.7 million over the thirty-five years. The female labour force increased especially rapidly; it was more than four-and-one-half times larger at the end of the period than at the beginning.

The labour force was not only growing, it was growing at an increasing rate over much of this period – from just over 2 per cent per year in the early 1950s to well over 3 per cent in the early 1970s. The rate then started to fall, but even in the latter part of the 1970s it was more than 3 per cent per year. However, by the early 1980s it was down to less than 1½ per cent per year, by far the lowest level since World War II.

Two factors underlay the overall rapid growth: (1) the members of the baby boom generation were reaching their late teens and early 20s, and entering the labour force; and (2) the labour force participation rates of women were rising rapidly. The growth of the male labour force reflected largely the effects of the baby boom. For men, the entry of young workers into the labour force considerably more than offset the continued tendency for older ones to retire earlier. For women, the picture was one of continued very rapid growth – an average rate of about 5 per cent per year from the later 1950s through to the early 1980s, well above the male rate. But even in the case of women, labour force growth had slowed markedly by the 1980s.

The Aggregate Labour Force: 1986-2016

The future of the labour force depends ultimately on two things: the size and age-sex distribution of the population from which it is drawn, and the rates of male and female participation at different ages.

Canada's population is now growing more slowly than at any previous time in this century. During the 1950s the population increased at about 2.7 per cent per year and during the 1960s at about 1.8 per cent. In contrast, growth averaged less than 1 per cent per year during the 1970s and the first half of the 1980s. The decline in the total fertility rate from about 4 births per woman at the end of the 1950s to 1.7 today is the major factor behind the slower pace of population growth.

Of course, fertility is not the only determinant of population growth – mortality, immigration and emigration also come into play. Of these, mortality and emigration tend to change rather slowly and, at least in recent historical experience, tend not to have major impacts on the labour force. Immigration is another matter. Its level often varies sharply from one year to another, and the largest proportion of immigrants are of labour force age. As fertility levels decline immigration could, therefore, come to have a relatively more important role. In fact, during the 1950s and 1960s about one-quarter of the population growth was from immigration, and the same was true of the early 1980s. Nonetheless it is clear that projections of the future population (and hence labour force) depend importantly on underlying assumptions about future fertility and immigration levels.

No one can predict with confidence what will happen to those levels. Using the MEDS1 computer model (see Denton, Feaver, and Spencer, 1989, 1990), we have made projections under a rather wide range of assumptions in order to explore the sensitivity of the projections to the assumptions. The projections shown in Table 2-1 are based on the following set of "standard" assumptions.

The total fertility rate remains at its current level of 1.69 births per woman; this is below the natural replacement level, which is about 2.1, and far lower than the nearly 4.0 that was attained in 1959, at the peak of the baby boom; all age-specific rates are assumed to remain at their current levels also.

Immigration is assumed to be 150 thousand per year; this is somewhat above the average of the last five or ten years, which was less than 120 thousand; the age-sex distribution of immigrants is assumed to remain constant, and is based on the average proportions over the period 1981-86.

Emigration is assumed equal to 0.19 per cent of the domestic population each year; this is approximately the average level over the last ten years; the age-sex distribution of emigrants is assumed constant, and is based on the average proportions over the period 1981-86.

Labour force participation rates are assumed to move in accordance with trends over the last few decades; in particular, it is assumed that the rates for older men will continue to decline and that the rates for women of most ages will continue to rise; all changes in participation rates are assumed to end by

2011, at which time the female rates would be somewhat higher than today, but still somewhat below the corresponding male rates for most age groups.

Based on these assumptions, Table 2-1 indicates that labour force growth will continue for a time, but at increasingly slower rates; by 2016, growth will have turned to decline. The general pattern is similar for both men and women in this regard, although the rate of growth of the female labour force is somewhat higher.

How critical are the specific assumptions underlying the projection? Would "reasonable" alternative assumptions reverse the prospect of slower growth or simply alter the time path of the changes in a minor way? To explore this matter, we have made projections under a wide range of alternative fertility, participation, and immigration assumptions. The rates of labour force growth under alternative fertility assumptions are depicted in Figure 2-1, the rates under alternative participation assumptions in Figure 2-2, and the rates under alternative immigration assumptions in Figure 2-3.

Consider first Figure 2-1. Five-year centred moving averages of annual rates of growth are plotted, based on historical labour force data for the period 1951-1989 and projections for the period 1990-2016. There are three projected fertility variants: the standard, as already discussed, and included here for reference; a "high" variant, which assumes that the total fertility rate will rise from 1.69 to 2.50 by 2001, and remain at that level thereafter; and a "low" variant, which assumes a fall from 1.69 to 1.30 by 2001, with subsequent constancy.

It is clear from Figure 2-1 that the past rates of labour force growth are much higher than the projected ones under all fertility assumptions, and that all three projections involve a strong trend towards slower labour force growth. That the pattern of labour force growth is unaffected until more than fifteen years into the projection period is easy to understand: it takes most of two decades for newborns to reach the age of labour force entry. We note that with high fertility the labour force does not actually stop growing; even in that case, however, there is a general reduction in the rate of growth throughout the projection period.

What of alternative rates of labour force participation? Figure 2-2 provides high and low alternatives to the standard assumptions. As noted above, the standard case assumes a continuation of recent trends. "High" means even higher rates for women of most age groups. Specifically, for women high participation means that for those aged 25 to 34, 35 to 44, and 45 to 54 the rates increase such that by 2011 half of the gap between male and female rates remaining under the standard assumptions has been removed, while for those aged 15 to 19 all the difference is removed. For men it means little change. (For men aged 65 to 69 the rates decrease less rapidly, and are 2.5 percentage points higher by 2011 than under the standard assumptions.) "Low" participation means that rates are somewhat lower than in the standard projection for men aged 55 and over and also for women in the age groups 20 to 24 through 45 to 54. It is evident that the specific assumptions make little difference to the projected decline in labour force growth rates. Growth is slower with low participation, somewhat faster with high participation, but the differences are relatively small. Growth turns to decline under all three assumptions, and does so at the beginning of the second decade of the next century. That is partly a reflection of the assumption that no further changes in participation rates occur after 2011, but the results would differ little if that assumption were modified.

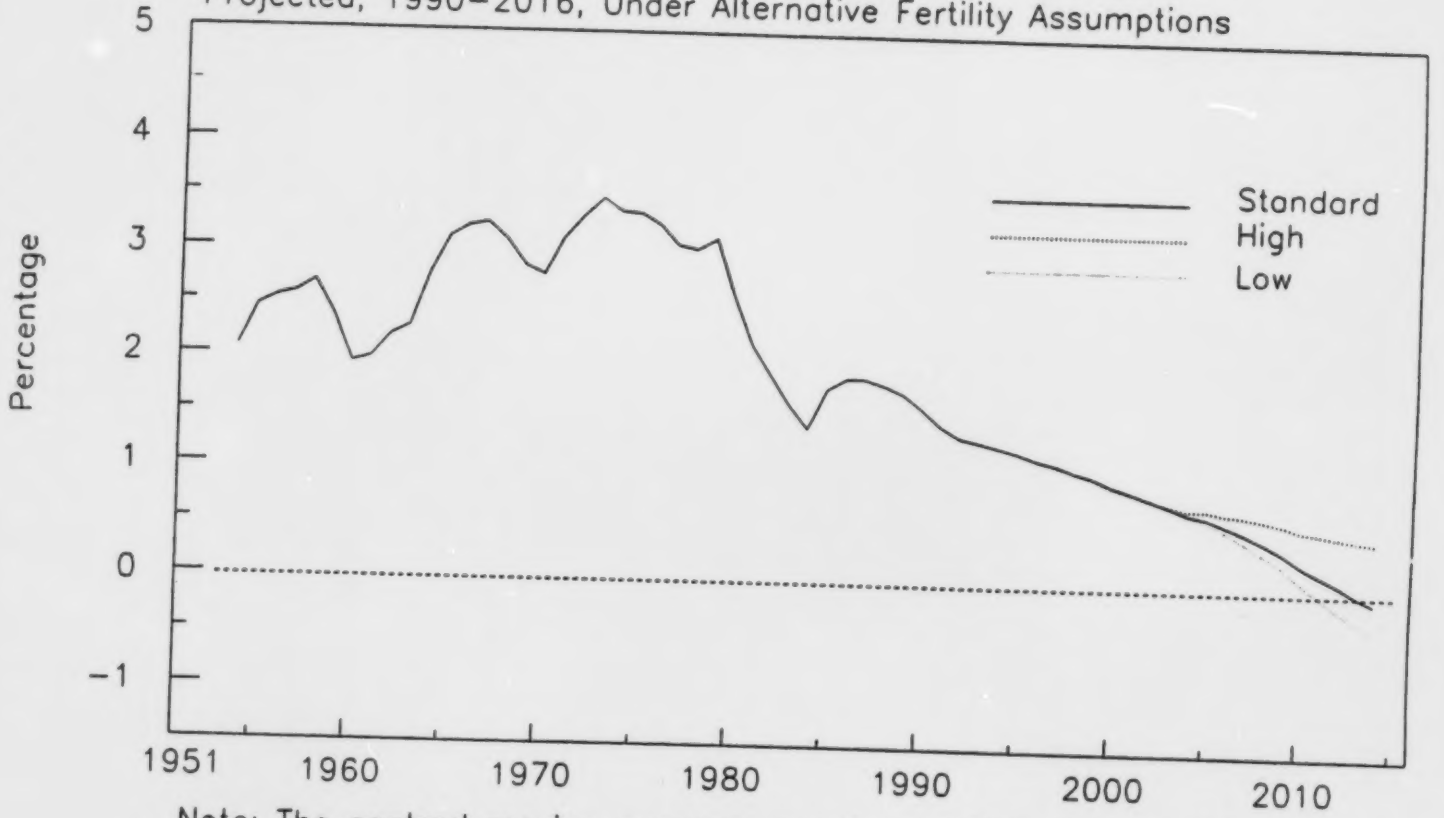
Immigration, is considered in Figure 2-3. Here "high" means an annual immigration level of 250 thousand (rather than 150 thousand, as in the standard case), and low means 50 thousand. It is evident from a comparison of this figure with the previous two that alternative levels of immigration have relatively large impacts on future labour force growth. Even so, the trend of growth rates is still clearly downward, and the major effect of the alternative assumptions is on the date at which labour force growth ceases. Roughly speaking, an additional 10 thousand immigrants per year puts off that date by one year. Of course, one could imagine a future in which immigration levels were not constant, but were increased from one year to the next in such a way as to offset entirely the tendency towards slower labour force growth. We do not explore such a (probably quite unrealistic) possibility here.

Concluding Remarks

Canada is moving from the rapid labour force growth that has dominated the post-war period into a period of much slower growth. Even though we speak in terms of decades, the transition is relatively abrupt, in demographic terms. The period of rapid growth ended in the early part of the 1980s, once all members of the baby boom generation had reached labour force age; the period of slow growth reflects mostly the much smaller numbers in the subsequent "baby bust" generation. The projections suggest that the labour force will grow at increasingly slow rates over the next two to three decades, and eventually will cease growing altogether.

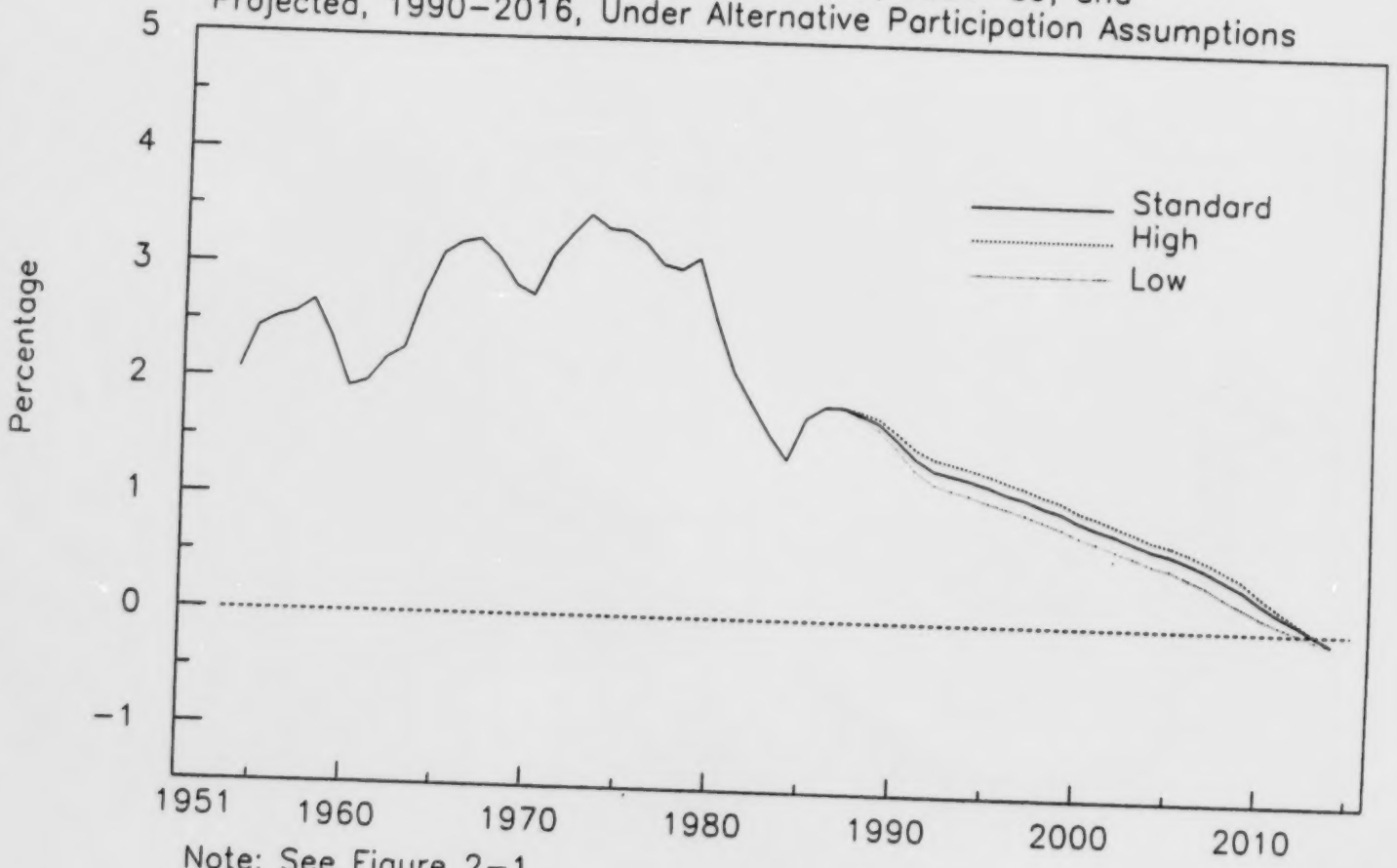
Slower labour force growth implies slower economic growth in the aggregate, other things equal. However, that need not imply that per capita incomes will fall, since the population will be growing more slowly too. Furthermore, slower population growth is occurring throughout the industrialized world; it is not limited to Canada. Whatever disadvantages may be associated with slower population and labour force growth will therefore be experienced also by Canada's major trading partners. We simply note these matters; consideration of the full range of economic effects of slower population and labour force growth is beyond the scope of the study. (For some consideration of economic effects in a general setting, see Denton and Spencer, 1975, 1983, 1984, 1987b, 1987c, 1987d, 1988a, 1988b, 1989, Denton, Feaver, and Spencer, 1989, 1990, Foot, 1982, and Wigdor and Foot, 1988.)

Figure 2–1: Annual Labour Force Growth Rates (5–Year Centred Moving Averages) Based on Actual Series, 1951–89, and Projected, 1990–2016, Under Alternative Fertility Assumptions



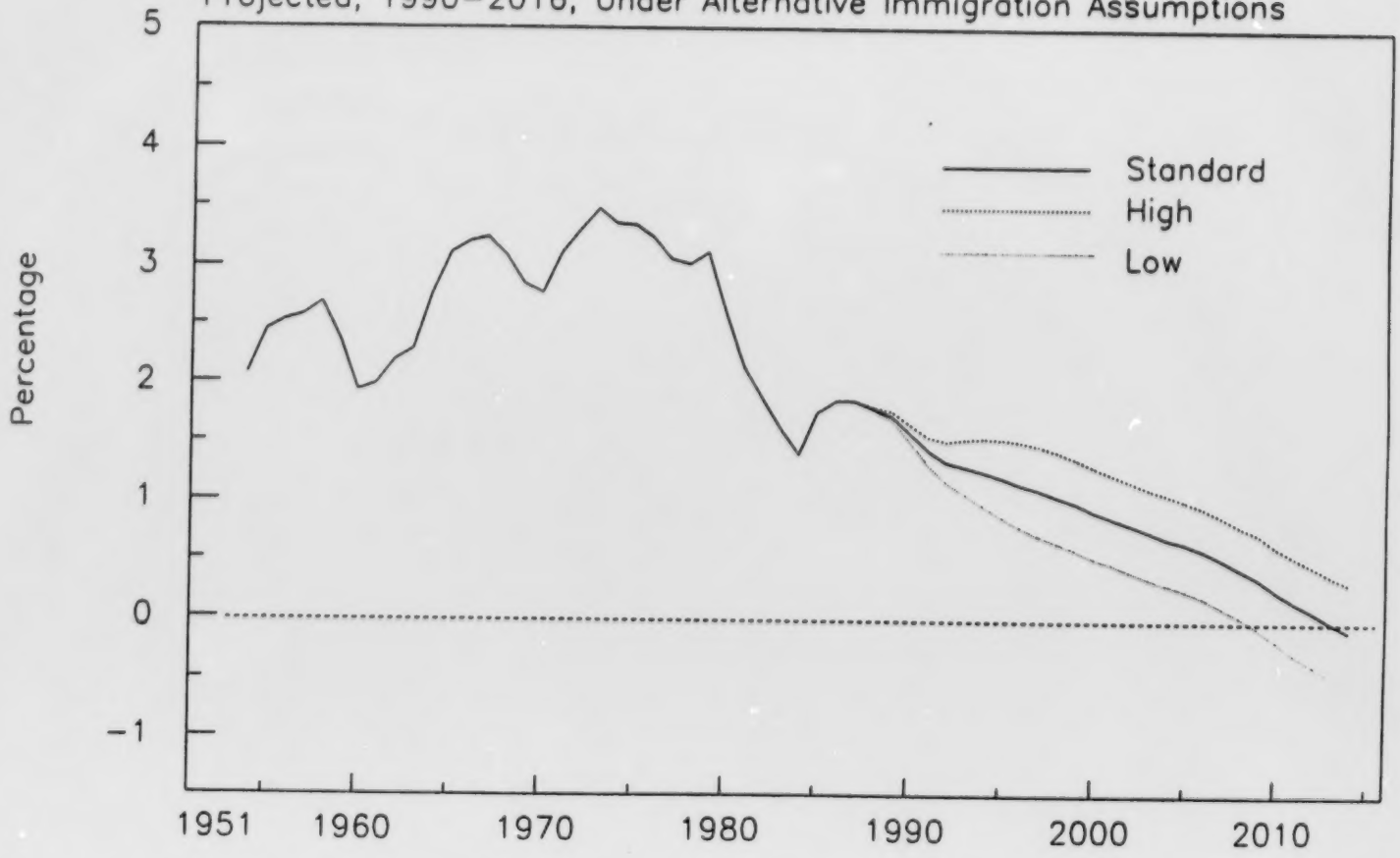
Note: The centred moving averages run from 1953–54 to 2013–14 and are plotted at the end–of–period year (e.g., 1953–54 is plotted at 1954).

Figure 2–2: Annual Labour Force Growth Rates (5–year Centred Moving Averages) Based on Actual Series, 1951–89, and Projected, 1990–2016, Under Alternative Participation Assumptions



Note: See Figure 2–1.

Figure 2–3: Annual Labour Force Growth Rates (5–Year Centred Moving Averages) Based on Actual Series, 1951–89, and Projected, 1990–2016, Under Alternative Immigration Assumptions



Note: See Figure 2–1.

Table 2-1: The Labour Force and Its Rate of Growth, 1951-2016

	Number ('000s)			Annual Growth Rate (%)		
Year	Total	Male	Female	Total	Male	Female
Historical						
1951	5,274	4,070	1,204	- -	- -	- -
1956	5,838	4,425	1,413	2.05	1.69	3.25
1961	6,563	4,729	1,834	2.37	1.34	5.35
1966	7,518	5,169	2,349	2.75	1.80	5.07
1971	8,653	5,683	2,971	2.85	1.91	4.81
1976	10,203	6,368	3,836	3.35	2.30	5.24
1981	11,899	7,051	4,849	3.12	2.06	4.80
1986	12,746	7,244	5,502	1.38	0.54	2.56
Projected (standard assumptions)						
1991	13,881	7,694	6,188	1.72	1.21	2.38
1996	14,770	8,051	6,720	1.25	0.91	1.66
2001	15,513	8,359	7,154	0.99	0.76	1.26
2006	16,056	8,614	7,442	0.69	0.60	0.79
2011	16,347	8,765	7,582	0.36	0.35	0.37
2016	16,274	8,775	7,500	-0.09	0.02	-0.22

Note: Labour force figures are annual averages. Growth rates are annual averages for the 5-year periods ending in the years indicated.

CHAPTER 3: THE CHANGING AGE AND SEX COMPOSITION OF THE LABOUR FORCE

Behind the changes in the overall labour force are changes in its age distribution and male-female composition. Those changes are the subject of this chapter. We consider both historical and projected changes.

Table 3-1 shows the age composition of the labour force in terms of three broad age groups – under 35, 35 to 54, and 55 and over – and also its sex composition. In 1951 48.6 per cent of the labour force were under 35. That percentage dropped to 44.8 in 1961 and then, with the entry of the baby boom generation, rose over the next twenty years to 53.7 in 1981. By 1986 it had declined to 51.1 and, under the assumptions embodied in the standard projection, it will continue to decline steadily, to less than 40 per cent early in the next century. This relative decline results, of course, from the smaller size of the "baby bust" generation that followed the baby boomers.

In 1951 there were about three people in the age group 35 to 54 for every four under 35. The ratio was somewhat higher between the mid-1950s and the mid-1960s and somewhat lower from the mid-1970s through to the early 1980s, but never far removed from 3:4. Under standard assumptions, the projected ratio will increase rapidly. By 1996 it will exceed 4:4, and by 2006 it will be 5:4. This reflects mostly the underlying changes in the age distribution of the population – especially the aging of the baby boom generation into the 35-54 range and the labour force entry of the much smaller baby bust generation.

Those aged 55 and over account for less than 15 per cent of the labour force during both the historical and projection periods. The percentage decreased from the mid-1960s to the mid-1980s, and will continue to do so until the mid-1990s in the standard projection. The percentage will then rise, first because of the sharp decline in the youngest group and then, after 2006, because members of the baby boom generation will have started to enter the 55+ range.

A major phenomenon of the post-war period has been the sustained rapid increase in the female labour force. Women accounted for 22.8 per cent of the total in 1951, 43.0 per cent in 1986. Put differently, in 1951 there were fewer than 30 women for every 100 men in the labour force; by 1986 there were 76 per 100. The assumptions underlying the projection anticipate a continuation of relatively rapid growth in the female labour force, such that it would account for about 46 per cent of the total by early in the next century.

What if the future differs from the assumptions embodied in the standard projection? Table 3-2 shows projected values for the percentage of the labour force under 35 (upper panel) and the percentage female (lower panel) for the cases of high fertility, high immigration, and high labour force participation, as defined in the previous chapter. By comparison with the standard case, high fertility results in a somewhat higher proportion of the labour force under the age of 35, although the difference does not become noticeable until 2006; it has no effect on the female proportion. Higher immigration also results in a slightly higher proportion under 35, reflecting the relatively young age composition of immigrants as compared to the domestic population; the impact on the female proportion is again negligible. Finally, high participation results in a somewhat lower proportion of young workers, since the differences between standard and high rates are relatively larger

for older workers; it results also in a higher proportion of female workers, because the differences between "standard" and "high" are relatively greater for women.

How will such compositional changes affect the productive capacity of the economy? The answer depends on how readily one type of worker can be substituted for another in production processes. There is in fact no strong evidence as to just how substitutable workers of different ages and sexes are. We are accustomed to seeing young people working in gasoline service stations; as noted below, 72 per cent of those employed in that industry in 1986 were under 35. Similarly, it is mostly young people who work in fast-food outlets. Certain other industries and occupations typically have high concentrations of older workers (e.g., about one-quarter of those in the real estate industry in 1986 were 55 and over), of female workers (99 per cent of secretaries and stenographers), or of male workers (94 per cent of workers in the lime manufacturers industry and the highway and bridge maintenance industry were male in 1986). Such proportions are not fixed by nature, and there is little doubt that in most cases workers from other age groups or of the other gender could do the work. But to the extent that such proportions change only slowly they are symptomatic of possible future adjustment difficulties.

If younger workers were readily substitutable for older workers and women readily substitutable for men, then large swings in relative numbers would matter little. In practice, the extent of such substitutability is difficult to measure, and remains a subject of debate. However, it is obvious that young workers are not perfect substitutes for other workers in all cases. It takes time to accumulate experience, an attribute that is important for productivity. Also, it is common practice for older workers to act as supervisors – and to provide formal or informal instruction to younger ones. Thus the roles of younger and older workers may be complementary rather than substitutable in at least some aspects of the economy's overall production process. Similarly with men and women: for whatever reasons, men and women are still typically found in quite different areas of work, as described below. To the extent that there are factors at work that make it difficult for the gender distribution of employment to change in particular industries or occupations when the overall gender proportion changes, there is again an indication of potential future adjustment difficulties.

In general terms, if workers of differing ages are not perfectly substitutable in production, then substantial fluctuations in their relative numbers may have significant implications for aggregate productivity and relative incomes. One might anticipate, for example, that the influx of young workers associated with the baby boom would have resulted in difficulties in absorbing their large numbers. This would have been reflected in relatively high levels of unemployment for young workers. (For documentation and analysis of the high youth unemployment rates of the 1970s, see, for example, Denton, Robb and Spencer, 1980.) It would also have been associated with relatively low income levels for such workers; their large numbers would have served to depress their wage levels. At the same time, the relative scarcity of older workers would have served to reduce their unemployment rates and increase their wage levels. (See, for example, Easterlin, 1978, 1980.) According to this view, one would anticipate that the reduction in the numbers of young workers who will enter the labour force over the next decade and beyond will cause their unemployment rates fall and their (relative) wage rates to rise. At the same time, the abundance of middle-aged and older workers would be expected to result in higher unemployment rates and lower wage levels for those groups. According to this view, then, members of the large baby boom cohorts would have received relatively low wage rates

when they joined the labour force and will continue to receive relatively low rates as they age. Hence, their expected lifetime incomes will be lower than they otherwise would have been. Conversely, those fortunate enough to belong to small cohorts will benefit from their scarcity, and will receive higher lifetime incomes. (All of this is aside from other considerations, of course, including changes in the educational composition of cohorts, changes in technology and productivity generally, and the increased proportions of two-earner families.)

How might the changing age composition of the labour force affect individual industries? The scarcity of younger workers, and the higher wage levels that are likely to go with them, will encourage industries that have come to rely on a relative abundance of inexpensive young workers to make adjustments. Such adjustments might take a variety of forms. There would be an incentive to economize on the use of younger workers by making greater use of older ones. (One surely does not have to be young to work in a fast food outlet or to pump gas at a service station.) There would also be an incentive to greater economy in the use of labour generally, through greater automation and mechanization of processes. (Fewer cashiers are required if automated processes allow one cashier to serve more customers, or even to enable customers to ring in their own purchases.)

The consequences associated with the changing sex-composition of the labour force can be analyzed along similar lines. The important question is how closely women resemble men (of the same age) in terms of their productive characteristics. If women were perfect substitutes for men in virtually all economic activities then the growth in their numbers would simply expand the productive capacity of the economy, at least in the longer run; in the shorter run, slowly changing social attitudes and work preferences might inhibit the substitution of women for men in some occupations and sectors of the economy, thus delaying the full realization of productive potential.

Table 3-1: The Age and Sex Composition of the Labour Force, 1951-2016

Year	<35	35-54	55+	Male	Female	Total
			-- percent of total --			
Historical						
1951	48.6	36.6	14.8	77.2	22.8	100.0
1956	47.0	38.6	14.4	75.8	24.2	100.0
1961	44.8	40.7	11.5	72.1	27.9	100.0
1966	45.0	40.4	14.5	68.8	31.2	100.0
1971	48.4	37.8	13.8	65.7	34.3	100.0
1976	52.9	35.4	11.7	62.4	37.6	100.0
1981	53.7	35.1	11.2	59.3	40.8	100.0
1986	51.1	38.4	10.4	57.0	43.0	100.0
Projected (standard assumptions)						
1991	47.5	42.8	9.7	55.4	44.6	100.0
1996	43.4	47.2	9.4	54.5	45.5	100.0
2001	40.2	49.9	9.9	53.9	46.1	100.0
2006	39.2	49.2	11.5	53.7	46.3	100.0
2011	39.2	47.8	13.0	53.6	46.4	100.0
2016	39.4	46.2	14.4	53.9	46.1	100.0

Table 3-2: Alternative Projections of the Percentage of the Labour Force Under 35 and the Percentage Female

Year	Standard Projection	High Fertility	High Immigration	High Participation
		-- percent under 35 --		
1986	51.1	51.1	51.1	51.1
1991	47.5	47.5	47.6	47.5
1996	43.4	43.4	43.8	43.4
2001	40.2	40.2	40.9	40.1
2006	39.2	39.3	40.0	39.1
2011	39.2	40.2	40.0	39.1
2016	39.4	42.0	40.0	39.2
		-- percent female --		
1986	43.0	43.0	43.0	43.0
1991	44.6	44.6	44.6	44.7
1996	45.5	45.5	45.5	45.8
2001	46.1	46.1	46.2	46.7
2006	46.3	46.3	46.5	47.1
2011	46.4	46.4	46.6	47.3
2016	46.1	46.2	46.3	47.0

CHAPTER 4: EMPLOYMENT AGE PYRAMIDS: 1971, 1981, AND 1986

We turn now to a more detailed examination of changes in the age-sex composition of aggregate employment. Our particular focus is on the population censuses of 1971, 1981, and 1986. It has been possible to compile comparable data from those three censuses relating to the characteristics of the employed labour force. (Comparability was possible based only on the definitions used in the 1971 census; the 1981 and 1986 data have therefore been adjusted by Statistics Canada to those definitions.) The census data are unique in their coverage and (particularly important for our purposes) in the amount of detailed information available about the industrial and occupational attachments of workers. All the census data used in this study are sample estimates; they are based on responses to the "long form" questionnaires which were given to one household in five.

We start by looking at the summary measures in Table 4-1. The measures relate to the employed labour force (including self-employed) as defined in the censuses, whereas those in previous chapters related to the average annual total labour force, as defined in the Labour Force Survey. A major difference is unemployment. Other differences result from differences in coverage and survey procedures, and from the fact that census employment figures relate to the week preceding the June census date whereas the labour force figures examined earlier are annual averages. In all three years the percentages for males were somewhat higher and those for females somewhat lower in the census data. However, the growth of total employment, as reported in the censuses, is generally in line with the growth of the total labour force, as measured by the Labour Force Survey.

Returning to Table 4-1, we see that employment grew by 36 per cent during the period 1971-81 and by less than 5 per cent during the period 1981-86; growth was much more rapid for women (59 per cent and 11 per cent) than for men (24 per cent and 0.5 per cent). During the earlier period, both the mean and median age of employed workers declined, whereas in the subsequent period of slower growth they rose. The mean and median ages of women fell by less than those of men during the earlier period, and rose by more during the later periods. Both periods reflect the continuing rise in the proportions of women in the labour force.

Let us consider now the age distribution of employment in some detail. Figure 4-1 shows three age pyramids representing the distribution of employment in 1971, 1981, and 1986. Age is shown by five-year groups, from 15 to 19 at the base of each pyramid to 65 and over at the top. Males are shown on the left side of the pyramid, females on the right. Each asterisk represents 0.5 per cent of total employment; thus, for example, the 10 asterisks at the base of the left side of the 1971 pyramid indicate that approximately 5 per cent of employment in that year consisted of 15 to 19-year-old males. It should be emphasized that the pyramids show percentage distributions and not totals; thus each pyramid contains 200 asterisks, and the total area represented by each pyramid is 100 per cent.

The three pyramids convey a clear impression of the changes in sex and age proportions over the fifteen-year period. It is interesting to observe how the female side of the distribution filled out, and came to resemble the general shape of the male side much more closely in 1986 than it had in 1971. While the percentage of the labour force accounted for by women at each age is less than that accounted for by men, the differences declined substantially over the fifteen years.

The changes in the age distribution of employment also stand out clearly in the pyramids. The largest male age groups in 1971 were 20 to 24 and 25 to 29, representing those who were born between 1941 and 1951. Ten years later, in 1981, the same men were in the age groups 30 to 34 and 35 to 39. Their numbers remained relatively large in the overall picture. However, those who were then in the age groups 20 to 24 and 25 to 29 were even more numerous; they had been born in the period 1951-61, when the annual number of births was rising steadily. Five years later, in 1986, the age group 20 to 24 included those who were born in the period 1961-66, at the very end of the baby boom; its numbers were considerably smaller than those of the three next oldest groups, but still relatively large. Taken together, those aged between 20 to 39 in 1986 represented the whole of the baby boom generation. Collectively they accounted for 54 per cent of male employment in 1986, as compared to 48 per cent in 1971.

For women, the changes in age structure over the 15-year period are the result not only of the entry and subsequent aging of those in the baby boom generation, but also of the large increases in participation rates. In 1971 there were 52 women employed per 100 men; by 1986 there were 74. The age profiles of the male/female ratios are shown in Fig. 4-2 for the three census years. Substantial rises in the ratios are evident for all ages, from 15 to 19 through to 60 to 64, with the largest increases occurring among women in the main childbearing and childraising years – 25 to 29 through 40 to 44. Another measure of change is provided by the percentage of the male/female gap that was closed. Calculations of that kind are plotted in Figure 4-3 for the periods 1971-81, 1981-86, and 1971-86. As can be seen, the gap closed most rapidly for the youngest age groups, less rapidly for the older ones; for those under 45, more than 50 per cent of the gap was closed between 1971 and 1986.

Figure 4-1: Employment Age Pyramids, 1971, 1981, and 1986 -- Total Employment

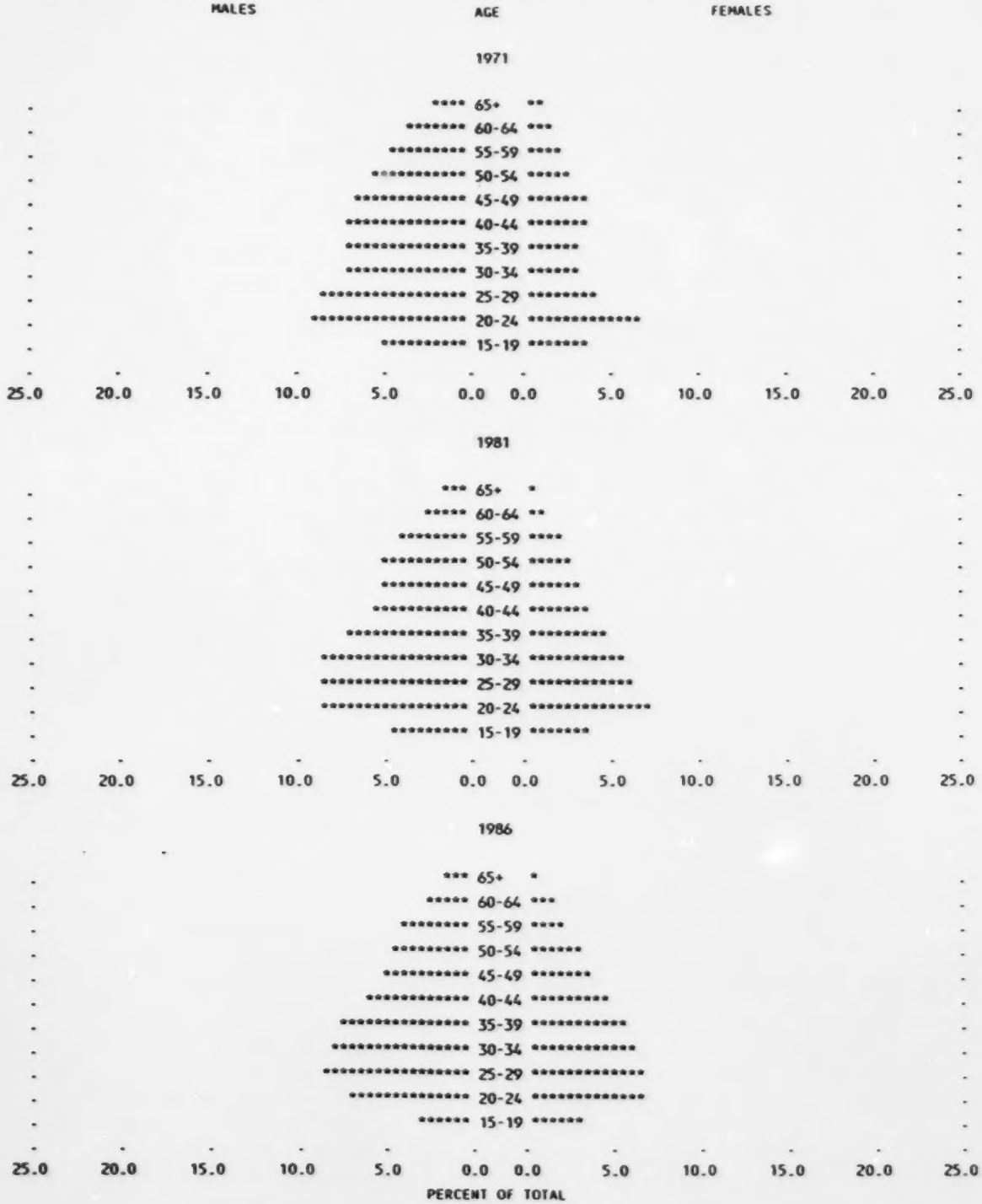


Figure 4-2: Employed Females per 100 Males, by Age Group, 1971, 1981, and 1986

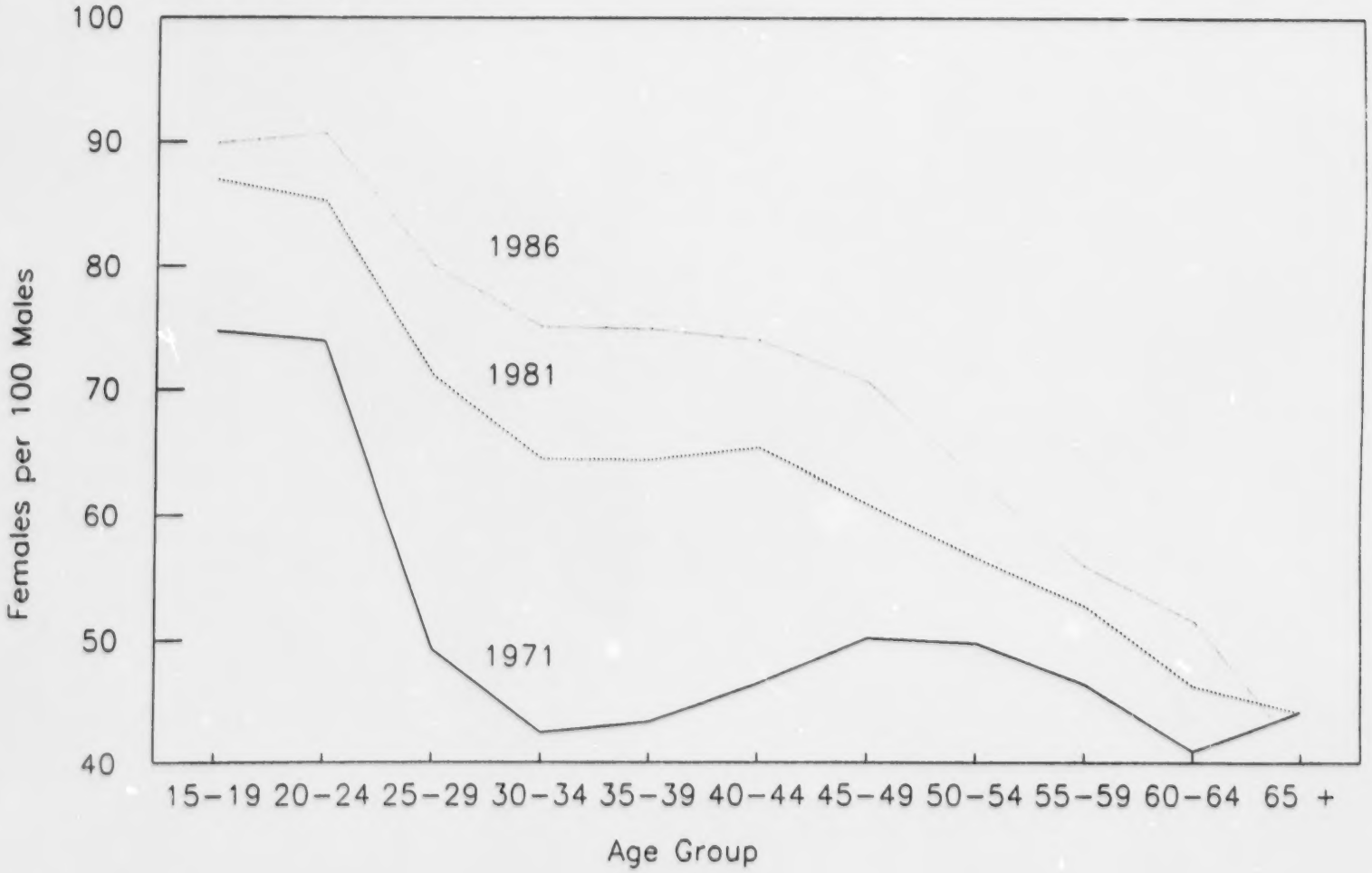
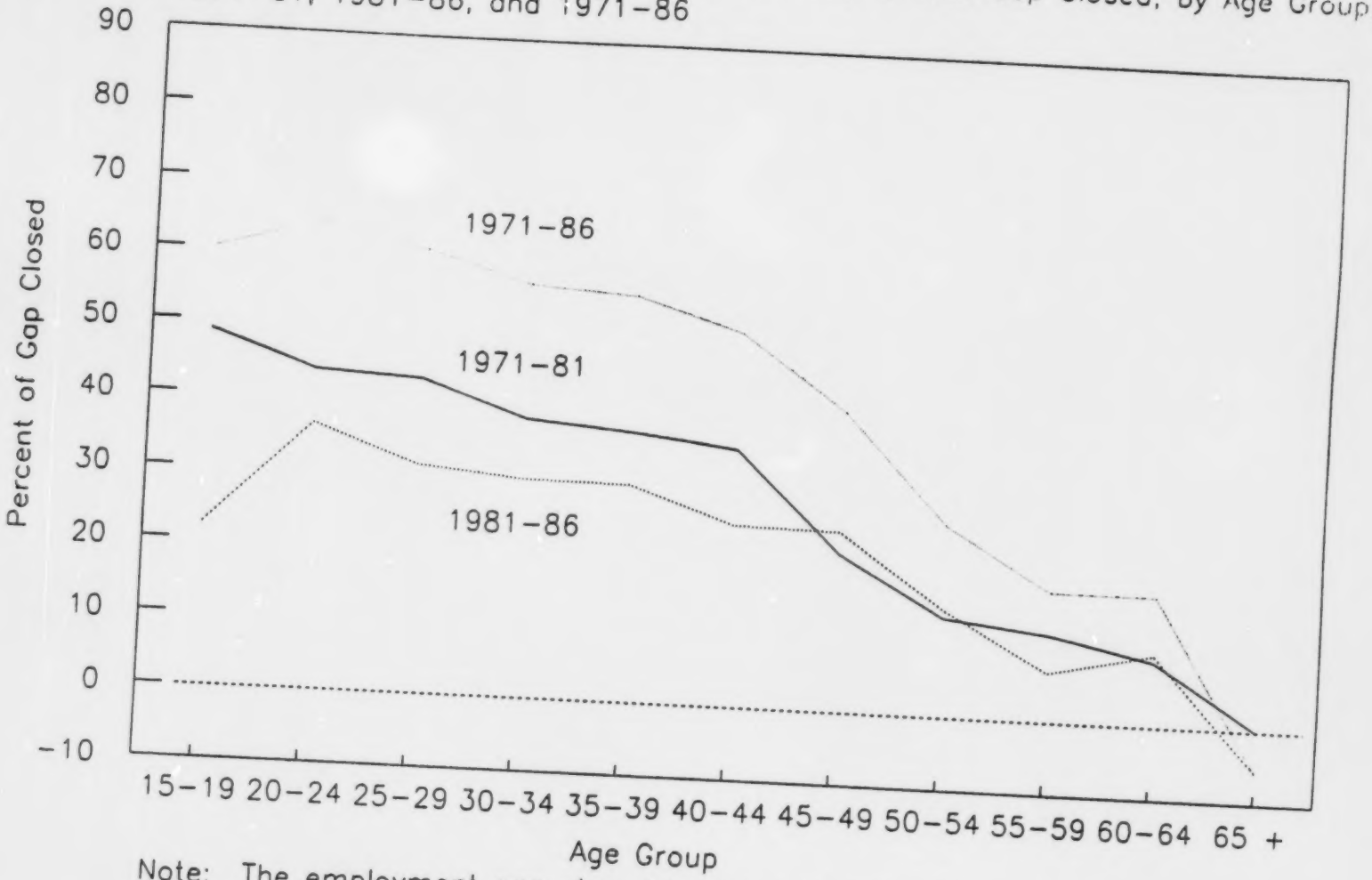


Figure 4-3: Percentage of Male-Female Employment Gap Closed, by Age Group, 1971-81, 1981-86, and 1971-86



Note: The employment gap closed is defined as the intercensal change in the female-to-male ratio, divided by 1.00 minus the base-period ratio.

Table 4-1: Summary Statistics of Employment, 1971, 1981, and 1986

	1971	1981	1986
Employment ('000s)			
Males	5,336	6,614	6,647
Females	2,782	4,426	4,923
Total	8,117	11,039	11,570
Mean Age			
Males	38.1	37.2	37.5
Females	36.1	34.9	35.6
Total	37.1	36.1	36.5
Median Age			
Males	37.3	35.3	36.3
Females	34.4	32.9	34.3
Total	36.5	34.4	35.4
Employment Ratio			
Females per 100 Males	52.1	66.9	74.1

CHAPTER 5: EMPLOYMENT RETENTION RATES: A COHORT INTERPRETATION

Men and women typically enter the labour force in their late 'teens or early twenties. Some remain in the labour force continuously until eventual retirement three to five decades later. Others experience one or more periods of interruption before finally retiring. Still others never retire. The interruptions are more common for women than for men, largely because of childbearing and childraising responsibilities. But temporary departures occur for other reasons as well – for reasons of illness, to upgrade skills or formal qualifications, to provide care for other family members, and so on.

We consider now the propensities for cohorts to remain employed as they age. A convenient measure is what we shall call here the "retention rate" – the proportion of people employed at one date who are still employed at a later date. Ideally we would calculate retention rates based on the labour force status of individuals at the two dates. However, in practice, we have age-sex information about the numbers employed in each of the three census years, but are not able to follow individuals over time. The 40 to 44-year-olds in Canada today are for the most part persons who were 35 to 39 and living in Canada five years ago. However, the groups are not identical: some members have died during the interval and there has been immigration and emigration. Nevertheless, the ratio of employment of 40 to 44-year-olds at one date to employment of 35 to 39-year-olds five years earlier, or to 30 to 34-year-olds ten years earlier, provides a rough indication of the stability of employment for the cohort as a whole as it ages. Ratios of this kind we refer to as *net retention rates*. (They are "net" in the sense that they disregard offsetting flows in and out of employment. A net rate of 1.00 does not mean that all individuals employed five years ago are still employed; some will have left employment and been replaced by others.)

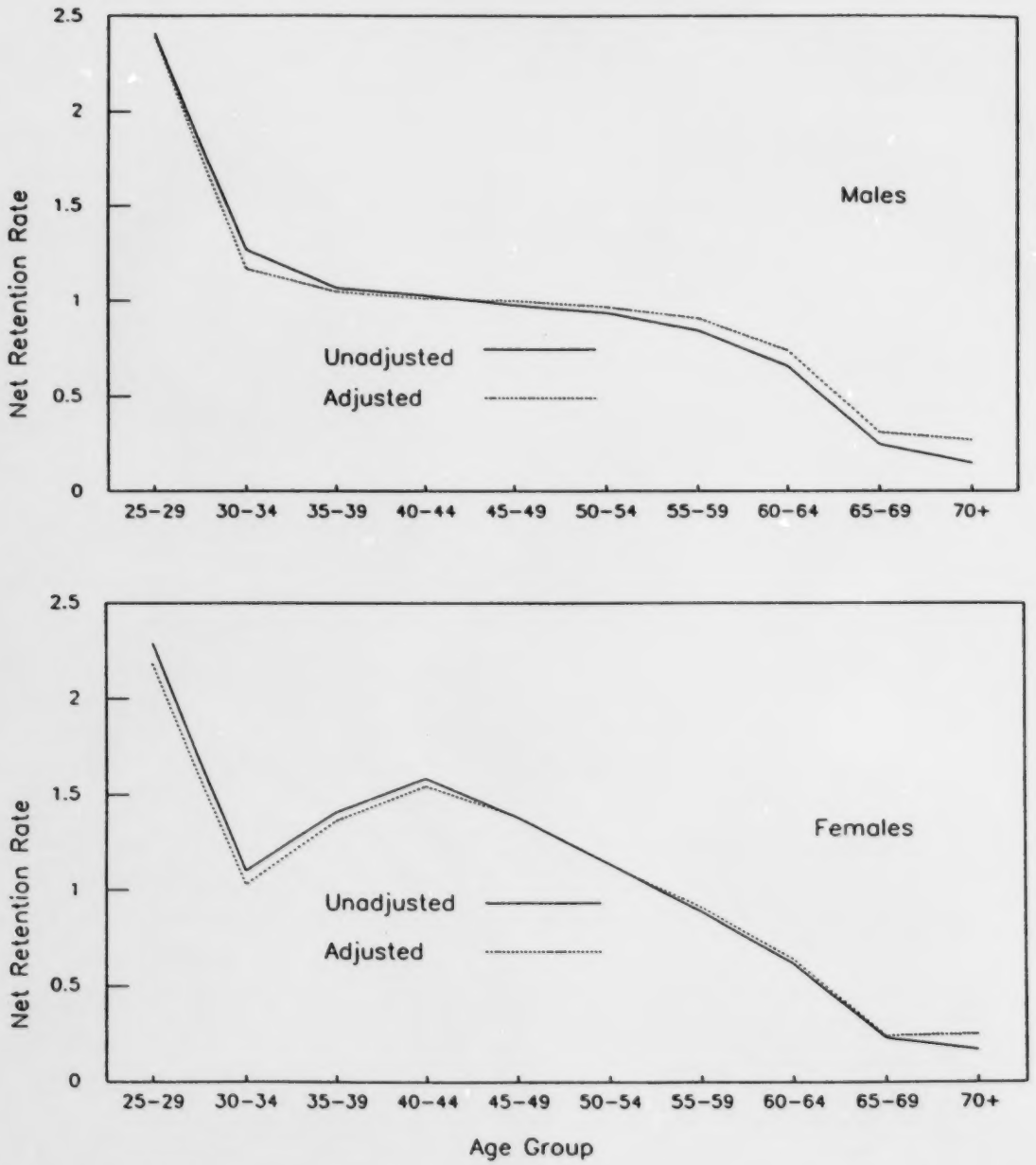
Table 5-1 shows net retention rates for each of the periods 1971-81 and 1981-86 for five-year age groups, separately for men and women, as well as for all ages combined. The "all ages" column shows simply the ratio of total employment in the later year to that in the earlier year. Thus, as noted before, male employment grew by 24 per cent between 1971 and 1981 but hardly at all between 1981 and 1986; female employment grew by 59 per cent in the earlier period and by 11 per cent in the later period.

More interesting for our purposes are the age-specific rates which compare employment in the later year with that in the earlier year when the members of an age group were either ten years younger (the 1971-81 rates) or five years younger (the 1981-86 rates). For men the rates decline with age, at least up to the oldest group, but for women they rise with age before declining, reflecting mostly the pattern of continued increases in female participation. For example, 58 per cent more women aged 40 to 44 were employed in 1981 than women aged 30 to 34 in 1971 (the retention rate is 1.58), but only 3 per cent more men (the retention rate is 1.03). The high rates for the youngest age group, especially over the ten-year period, result largely from the transition between school and labour force participation; most members of the cohort aged 25 to 29 in 1981 were still in school in 1971. We note also that the declines are rather more pronounced for the older groups over the longer period than over the shorter one; retirement is more likely over ten years than over five.

The same rates are reported in Table 5-2 after adjustment for changes in cohort population size between the two census dates. The adjusted series are preferred, since they make allowance for population changes that occurred between the two census years in consequence of immigration, emigration, and mortality. However, a comparison of Tables 5-1 and 5-2 shows that the adjustment makes little practical difference.

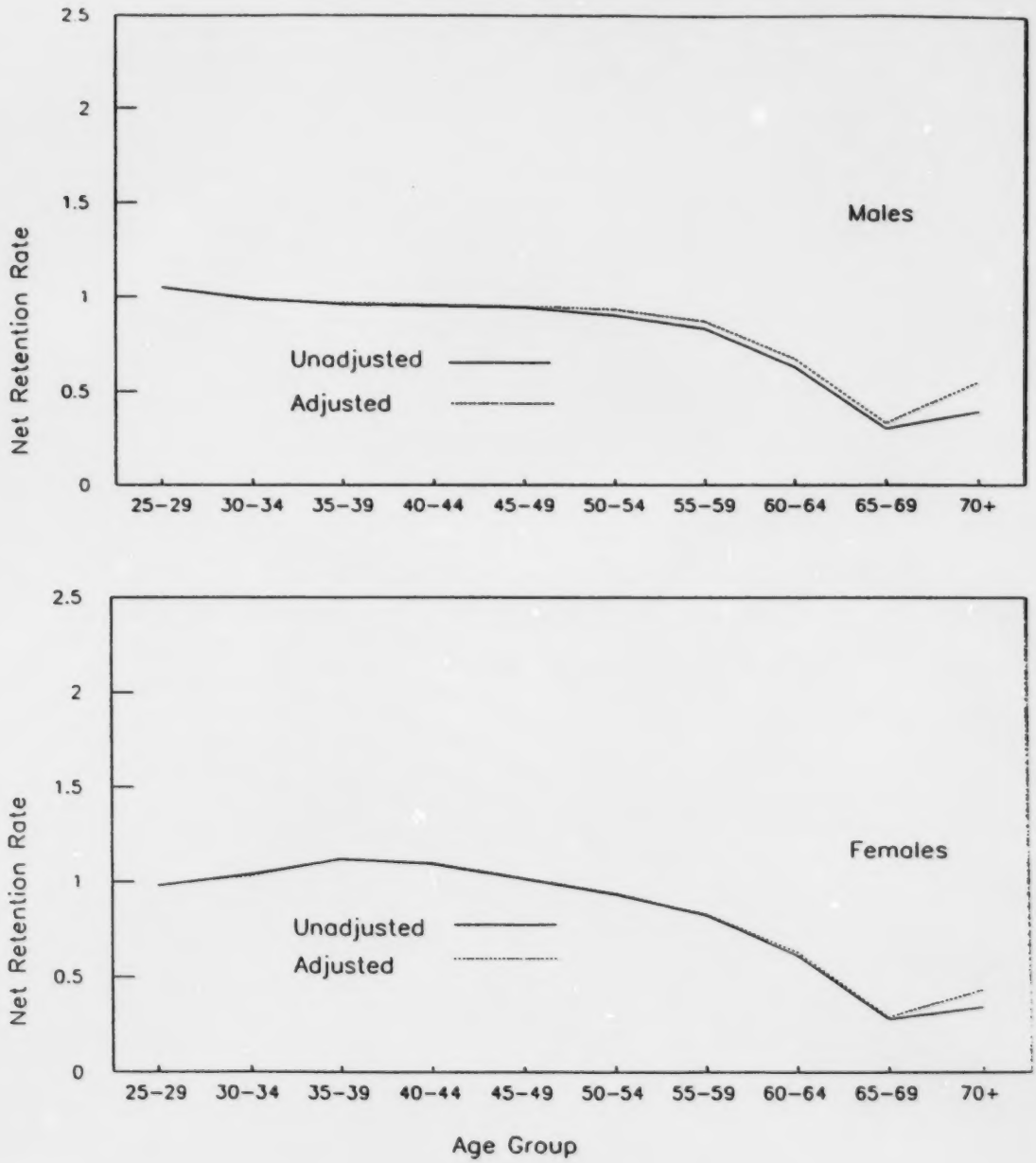
The retention rates for the first intercensal period are plotted in Figure 5-1, both with and without adjustment. Figure 5-2 shows the same series for the later period. A number of points stand out. One is the relatively small numerical effect of the adjustment. However, the plots reflect the tendency for the adjusted rates to be lower than the unadjusted ones at younger ages and higher at older ages. We see also the marked increase in similarity in the age patterns of male and female retention rates from the first intercensal period to the second. The sharp rise in female rates for the age groups 30 to 34, 35 to 39 and 40 to 44, and the sharp drop for older age groups, that characterized the earlier period were substantially moderated by the later period. On this measure, female labour force attachment has come to look more like that of males.

Figure 5-1: Net Intercensal Retention Rates, 1971-81



Note: Net retention rates are defined in the text. The rates are shown with and without adjustments for cohort population change.

Figure 5-2: Net Intercensal Retention Rates, 1981-86



Note: See Figure 5-1.

Table 5-1: Net Intercensal Retention Rates with No Adjustment for Cohort Population Change -- Employed Males and Females, by Age Group, 1971-81 and 1981-86

	Age Group in Later Year										
	All Ages	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1971-81											
Males	1.24	2.41	1.27	1.07	1.03	0.98	0.94	0.85	0.66	0.25	0.15
Females	1.59	2.29	1.10	1.40	1.58	1.38	1.14	0.89	0.62	0.23	0.17
1981-86											
Males	1.00	1.05	0.99	0.96	0.95	0.94	0.90	0.83	0.63	0.30	0.39
Females	1.11	0.98	1.04	1.12	1.09	1.01	0.93	0.82	0.61	0.28	0.34

Note: Net retention rates are defined in the text.

Table 5-2: Net Intercensal Retention Rates with Adjustment for Cohort Population Change -- Employed Males and Females, by Age Group, 1971-81 and 1981-86

	Age Group in Later Year										
	All Ages	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1971-81											
Males	1.11	2.39	1.17	1.05	1.01	1.00	0.97	0.91	0.74	0.31	0.27
Females	1.40	2.18	1.03	1.36	1.54	1.38	1.14	0.91	0.64	0.24	0.25
1981-86											
Males	0.97	1.05	0.98	0.97	0.96	0.95	0.93	0.87	0.67	0.33	0.55
Females	1.06	0.98	1.03	1.12	1.10	1.02	0.94	0.83	0.63	0.29	0.43

Note: Net retention rates are defined in the text.

PART II DEMOGRAPHIC CHARACTERISTICS OF EMPLOYMENT: INDUSTRIES

CHAPTER 6: INDUSTRIAL DISTRIBUTION AND GROWTH

We consider next the patterns of industrial growth and decline that have characterized the period 1971-86, as evidenced by tabulations for the three census years. Table 6-1 shows employment (in thousands and as a percentage of total) in each of the three years, and annual intercensal growth rates for each of the eleven "industry divisions" defined by Statistics Canada, plus a residual category labelled "unspecified or undefined." (See Statistics Canada, 1970, for more information about the standard industrial classification system. Silver, 1989, provides a brief analysis of industrial as well as occupational trends.) We have grouped the divisions under three major headings: primary industries; manufacturing and construction industries; and service industries. Primary industries include agriculture, forestry, fishing and trapping, and mines, quarries and oil wells. Manufacturing and construction industries include just those two. Service industries include transportation, communication and other utilities, trade, finance, insurance, and real estate, community, business and personal services, and public administration and defence.

A major feature of employment over the fifteen-year period was the strong growth of the service industries, both relatively and in absolute terms, and the relative declines in the other groups. Service industries accounted for 58 per cent of employment in 1971 and 68 in 1986; over the same period, the share of employment in manufacturing and construction fell from 26 to 22 per cent. To some extent these figures reflect economic circumstances peculiar to each of the three census years, but mostly they reflect basic trends.

Canada has thus become very much a service-oriented economy. Service employment grew at an average of 3.5 per cent per annum over the fifteen-year period, well above the 2.4 per cent average rate for all industries combined, and relatively high growth rates were experienced in both sub-periods. This general pattern is similar to that observed in other advanced industrial nations. In the United States, for example, service industry employment accounted for 68 per cent of total employment in 1986, up from 58 per cent in 1963; in the European Community it accounted for 55 per cent in 1986, up from 40 per cent in 1963; and in Japan it accounted for 52 per cent in 1986, up from 42 per cent in 1963. (*Economist*, Jan. 6, 1990, p. 61.)

The most rapid growth in service employment occurred in its largest division – community, business and personal services – and in its smallest one – finance, insurance and real estate. There was also relatively rapid growth in the trade division. Within the service industries, only in transportation, communication and other utilities was employment growth below the overall average, and then only slightly. We observe that employment in public administration and defence grew at the average rate for all industries.

The combined proportionate share of the manufacturing and construction industries declined, as noted. However, the decline was concentrated in manufacturing, and mainly in the second intercensal period. In both industry divisions the rate of employment growth was close to the average during the first period, when overall growth was relatively rapid, but well below the average during the second one, when growth was generally slow.

Primary industries represent a relatively small and decreasing fraction of employment. Most primary employment is in agriculture, which accounted for 4.1 per cent of the overall total in 1986, compared with 5.8 in 1971. (Agriculture is an industry that has been experiencing a declining work force for many decades.)

More detailed information about employment within the major groups is presented in Tables 6-2 to 6-4. Within the primary industries the major groups identified as providing specialized services grew relatively rapidly – especially those involved in forestry, fishery, and agriculture (Table 6-2). The manufacturing and construction industries both experienced relatively slow growth over the fifteen-year period as a whole, as already noted. However, as Table 6-3 makes clear, some groups grew rapidly while others declined. Rapid growth was experienced by rubber and plastics, furniture and fixtures, printing, publishing and allied industries, miscellaneous manufacturing, and special trade contractors; declines were concentrated in the leather, textile, and knitting mills industries and the tobacco products industries.

The generally rapid growth in the service industries is unevenly spread across groups (Table 6-4). The relatively slow growth in transportation accounted for much of the reduced importance of the transportation, communication and other utilities division: the share of transportation fell from 13.5 to 11.3 per cent of the service total over the fifteen-year period. The shares of trade – both wholesale and retail – also declined. As noted, the most rapid growth was in the finance, insurance and real estate and the community, business and personal service divisions. Services to business management grew most rapidly of all the major groups; 7 per cent annual growth resulted in an employment increase from less than 200,000 in 1971 to about 550,000 in 1986. Health and welfare services was the largest component of community, business and personal services in 1986; its growth was above average over the fifteen-year period, and by the end of the period it accounted for almost 12 per cent of all employment in services. Education and related services was the second largest component in 1986; it had been the largest in 1971, but its subsequent growth was relatively slow. Within the public administration and defence division, the growth at the federal level was considerably below average, and that at the provincial and local levels considerably above. (On patterns of growth and change in the federal public service, see Morgan, 1981, 1986.)

Tables 6-5 through 6-8 show the range of industries that grew especially rapidly or especially slowly between 1971 and 1986. (Employment growth is indicated in these tables by the ratio of employment in 1986 to that in 1971; note that industries among those referred to as "most slowly growing" may, in fact, have had negative growth rates – i.e., they may have declined.) Table 6-5 reports for manufacturing industries, 6-6 for transportation, communication and other utilities, 6-7 for trade, and 6-8 for community, business and personal service industries. Those are the four largest industry divisions, both in terms of employment and in terms of the numbers of component industries defined by Statistics Canada.

Within manufacturing (Table 6-5) the fifteen fastest growing industries all expanded rapidly. Employment in miscellaneous clothing, the fastest growing of the top fifteen, was 5.3 times greater in 1986 than in 1971; employment in fish products, the slowest growing of the fifteen, was 1.6 times greater. The most rapidly growing industries were spread across major industry groups, although with some concentration in wood-related industries and publishing. Employment in the fifteen fastest growing accounted collectively for 2.5 per cent of total employment in 1986, compared to 1.8 per cent in 1971. The fifteen "slowest growing" industries in manufacturing were, in fact, all declining over the period. The declines ranged from about 19 per cent for clay products manufacturers to 54 per cent for miscellaneous vehicle manufacturers. Leather, wood, electrical products, and especially textile industries were prominent among the declining industries. Collectively, the fifteen accounted for 0.6 per cent of all employment in 1986, down from 1.3 per cent in 1971.

There are only twenty-four industries in the transportation, communication and other utilities division. The eleven in the top panel of Table 6-6 exceeded the 1.425 average growth factor for that division; they accounted for 2.7 per cent of overall aggregate employment in 1986 and 3.5 per cent in 1971. Within transportation, transportation service industries grew relatively rapidly, as did urban transit systems and air transport, while railways, water, and interurban and rural bus transport declined. Among the utilities, growth was generally slower than average in electric power and water systems and above average in gas distribution and "other utilities." Employment more than doubled in radio and television broadcasting, but the communications industries otherwise experienced below-average growth, and in the case of telegraph and cable systems, actual declines.

Above-average growth was the norm in the trade industries (Table 6-7). Of the forty in this group, only nine experienced below-average growth, and of those only four experienced declines. The most rapidly growing industries were predominantly from retail trade – eleven of the fifteen – whereas all of the absolute declines were in wholesale trade. (One might expect that the apparent concentration of high employment growth in retail trade and slow growth in wholesale trade would be indicative of trends in the trade industries generally. However, on average, wholesale and retail trade employment grew at about the same rates over the period – 3.1 per cent versus 3.2.)

As observed previously, average employment growth was especially high in community, business, and personal services – 4.2 per cent per year compared to 2.4 per cent overall. Thus it is not surprising to see, in Table 6-8, that employment in each of the fifteen fastest growing industries within that division increased more than two-and-one-half fold. The fastest growing of all was computer services, in which employment increased more than thirteen-fold, implying an average rate of more than 18 per cent per year. That is the most rapid growth observed for any industry in our entire data set. Even for restaurants, caterers and taverns, the slowest of the fifteen most rapidly growing industries, growth exceeded 6.6 per cent per year. In the main, rapid growth was concentrated in the major group "services to business management" while relatively slow growth was concentrated in personal services. Only three of the fifteen "slowest growing" industries in this division experienced absolute declines in employment.

Table 6-1: Employment, 1971, 1981, and 1986 -- Industry Divisions

	Number('000s)			% of Total			% Growth Rate		
	1971	1981	1986	1971	1981	1986	71-81	81-86	71-86
Primary Industries	688	761	748	8.5	6.9	6.5	0.9	-0.4	0.6
1 - Agriculture	472	458	474	5.8	4.1	4.1	-0.3	0.7	0.0
2 - Forestry	62	78	79	0.8	0.7	0.7	2.3	0.2	1.6
3 - Fishing & trapping	24	32	35	0.3	0.3	0.3	2.9	2.1	2.6
4 - Mines (inc. milling), quarries & oil wells	130	194	160	1.6	1.8	1.4	4.1	-3.7	1.4
Manufacturing and Construction Industries	2,078	2,708	2,571	25.6	24.5	22.2	2.7	-1.0	1.4
5 - Manufacturing industries	1,594	2,044	1,954	19.6	18.5	16.9	2.5	-0.9	1.4
6 - Construction industry	484	664	617	6.0	6.0	5.3	3.2	-1.4	1.6
Service Industries	4,728	7,232	7,909	58.2	65.5	68.4	4.3	1.8	3.5
7 - Transportation, communication & other utilities	638	883	893	7.9	8.0	7.7	3.3	0.2	2.3
8 - Trade	1,193	1,809	1,910	14.7	16.4	16.5	4.2	1.1	3.2
9 - Finance, insurance & real estate	344	594	633	4.2	5.4	5.5	5.6	1.3	4.2
10 - Community, business & personal	1,936	3,116	3,598	23.9	28.2	31.1	4.9	2.9	4.2
11 - Public administration & defence	616	831	875	7.6	7.5	7.6	3.0	1.0	2.4
Unspecified or Undefined Industries	624	338	342	7.7	3.1	3.0	-5.9	0.2	-3.9
All Industries	8,117	11,039	11,570	100.0	100.0	100.0	3.1	0.9	2.4

Note: Growth rates are annual averages.

Table 6-2: Employment in Primary Industries, 1971, 1981, and 1986 -- Major Groups

	Number('000s)			% of Total			% Growth Rate		
	1971	1981	1986	1971	1981	1986	71-81	81-86	71-86
Div.1 - Agriculture	472	458	474	68.5	60.1	63.3	-0.3	0.7	0.0
Farms	463	440	454	67.3	57.9	60.7	-0.5	0.6	-0.1
Services incidental to agriculture	9	17	19	1.3	2.2	2.6	6.9	2.3	5.3
Div.2 - Forestry	62	78	79	9.1	10.3	10.6	2.3	0.2	1.6
Logging	53	59	52	7.6	7.8	7.0	1.2	-2.5	0.0
Forestry services	10	19	27	1.4	2.5	3.6	6.8	7.3	7.0
Div.3 - Fishing & trapping	24	32	35	3.5	4.2	4.7	2.9	2.1	2.6
Fishing	22	27	31	3.2	3.6	4.2	2.3	2.7	2.4
Fishery services	1	4	3	0.2	0.5	0.5	10.9	-1.2	6.7
Hunting & trapping	1	1	1	0.1	0.1	0.1	0.5	-5.0	-1.4
Div.4 - Mines, quarries & oil wells	130	194	160	18.9	25.5	21.4	4.1	-3.7	1.4
Metal mines	64	74	45	9.3	9.7	6.0	1.5	-9.5	-2.3
Mineral fuels	28	59	64	4.1	7.7	8.5	7.7	1.6	5.6
Non-metal mines (exc. coal mines)	15	17	13	2.2	2.3	1.7	1.2	-5.4	-1.0
Quarries and sand pits	6	8	10	0.9	1.1	1.3	2.8	3.2	3.0
Services incidental to mining	17	35	29	2.4	4.6	3.8	7.8	-4.0	3.7
All Primary Industries	688	761	748	100.0	100.0	100.0	1.0	-0.3	0.6

Note: Growth rates are annual averages.

Table 6-3: Employment in Manufacturing and Construction Industries, 1971, 1981, and 1986 -- Major Groups

	Number('000s)			% of Total			% Growth Rate		
	1971	1981	1986	1971	1981	1986	71-81	81-86	71-86
Div.5 - Manufacturing	1,594	2,044	1,954	76.7	75.5	76.0	2.5	-0.9	1.4
Food & beverage industries	225	271	265	10.8	10.0	10.3	1.9	-0.5	1.1
Tobacco products industries	8	8	7	0.4	0.3	0.3	-0.7	-2.2	-1.2
Rubber & plastics products industries	42	64	70	2.0	2.3	2.7	4.3	2.0	3.5
Leather industries	26	29	23	1.3	1.1	0.9	1.0	-4.5	-0.8
Textile industries	64	73	63	3.1	2.7	2.5	1.4	-2.9	-0.1
Knitting mills	17	20	15	0.8	0.7	0.6	1.6	-5.0	-0.6
Clothing industries	87	111	106	4.2	4.1	4.1	2.4	-0.8	1.3
Wood industries	92	135	122	4.4	5.0	4.7	3.9	-2.1	1.9
Furniture & fixture industries	41	63	68	2.0	2.3	2.6	4.4	1.4	3.4
Paper & allied industries	116	138	123	5.6	5.1	4.8	1.8	-2.3	0.4
Printing, publishing & allied ind's	98	126	141	4.7	4.7	5.5	2.6	2.3	2.5
Primary metal industries	112	132	113	5.4	4.9	4.4	1.6	-3.0	0.1
Metal fabricating ind's (ex. m&t eqpt)	127	177	152	6.1	6.5	5.9	3.4	-3.0	1.2
Machinery ind's (ex. electrical mach.)	73	114	101	3.5	4.2	3.9	4.5	-2.5	2.1
Transportation equipment industries	152	194	205	7.3	7.1	8.0	2.4	1.1	2.0
Electrical products industries	109	126	122	5.3	4.7	4.7	1.5	-0.7	0.7
Non-metallic mineral products ind's	53	65	55	2.5	2.4	2.1	2.1	-3.3	0.3
Petroleum & coal products industries	19	25	23	0.9	0.9	0.9	3.0	-2.0	1.3
Chemical & chemical products ind's	75	95	95	3.6	3.5	3.7	2.5	-0.1	1.6
Misc. manufacturing industries	58	78	86	2.8	2.9	3.3	3.0	2.0	2.7
Div.6 - Construction	484	664	617	23.3	24.5	24.0	3.2	-1.4	1.6
General contractors	236	268	232	11.3	9.9	9.0	1.3	-2.9	-0.1
Special-trade contractors	248	395	385	12.0	14.6	15.0	4.8	-0.5	3.0
All Manufacturing and Construction	2,078	2,708	2,571	100.0	100.0	100.0	2.7	-1.0	1.4

Note: Growth rates are annual averages.

Table 6-4: Employment in Service Industries, 1971, 1981, and 1986 -- Major Groups

	Number('000s)			% of Total			% Growth Rate		
	1971	1981	1986	1971	1981	1986	71-81	81-86	71-86
Div.7 - Transportation, communication & other utilities	638	883	893	13.5	12.2	11.3	3.3	0.2	2.3
Transportation	382	500	522	8.1	6.9	6.6	2.7	0.9	2.1
Storage	15	21	15	0.3	0.3	0.2	3.0	-6.2	-0.2
Communication	156	237	230	3.3	3.3	2.9	4.3	-0.7	2.6
Electric power, gas & water utilities	85	125	127	1.8	1.7	1.6	4.0	0.2	2.7
Div.8 - Trade	1,193	1,809	1,910	25.2	25.0	24.1	4.2	1.1	3.2
Wholesale trade	329	522	524	7.0	7.2	6.6	4.7	0.1	3.1
Retail trade	864	1,287	1,385	18.3	17.8	17.5	4.1	1.5	3.2
Div.9 - Finance, insurance & real estate	344	594	633	7.3	8.2	8.0	5.6	1.3	4.2
Finance industries	178	305	314	3.8	4.2	4.0	5.5	0.6	3.9
Insurance carriers	68	98	108	1.4	1.4	1.4	3.7	1.9	3.1
Insurance agencies & real estate ind	98	191	211	2.1	2.6	2.7	6.9	2.1	5.3
Div.10 - Community, business & personal	1,936	3,116	3,598	41.0	43.1	45.5	4.9	2.9	4.2
Education & related services	554	731	774	11.7	10.1	9.8	2.8	1.2	2.3
Health & welfare services	498	807	941	10.5	11.2	11.9	4.9	3.1	4.3
Religious organizations	46	59	64	1.0	0.8	0.8	2.5	1.7	2.2
Amusement & recreation services	66	113	132	1.4	1.6	1.7	5.5	3.2	4.7
Services to business management	197	448	545	4.2	6.2	6.9	8.6	4.0	7.0
Personal services	167	166	230	3.5	2.3	2.9	-0.1	6.8	2.2
Accommodation & food services	299	568	662	6.3	7.9	8.4	6.6	3.1	5.5
Miscellaneous services	109	224	249	2.3	3.1	3.1	7.5	2.1	5.7
Div.11 - Public administration & defence	616	831	875	13.0	11.5	11.1	3.0	1.0	2.4
Federal administration	318	366	378	6.7	5.1	4.8	1.4	0.7	1.2
Provincial administration	156	245	260	3.3	3.4	3.3	4.6	1.2	3.5
Local administration	141	219	235	3.0	3.0	3.0	4.5	1.4	3.5
Other government offices	2	2	1	0.0	0.0	0.0	-3.1	-1.6	-2.6
All Service Industries	4,728	7,232	7,909	100.0	100.0	100.0	4.3	1.8	3.5

Note: Growth rates are annual averages.

Table 6-5: The Most Rapidly and Most Slowly Growing Manufacturing Industries, 1971-86

	SIC Code (1970)	Employment 1971	Employment 1986	Ratio 1986/71
Most Rapidly Growing Industries				
Misc. clothing industries	249	3,760	20,035	5.328
Publishing only	288	6,560	18,665	2.845
Auto fabric accessories industries	188	2,860	7,165	2.505
Office furniture manufacturers	264	3,715	9,200	2.476
Plastics fabricating industry, n.e.s.	165	18,765	45,015	2.399
Platemaking, typesetting & trade bindery	287	6,020	13,915	2.311
Sash, door & other millwork plants	254	13,435	30,085	2.239
Signs & displays industry	397	5,095	9,325	1.830
Office & store machinery manufacturers	318	14,020	24,990	1.782
Leaf tobacco processors	151	600	1,035	1.725
Mfrs. of plastics & synthetic resins	373	4,230	7,220	1.707
Misc. wood industries	259	6,210	10,485	1.688
Household furniture manufacturers	261	26,120	43,060	1.649
Ready-mix concrete manufacturers	355	6,340	10,400	1.640
Fish product industries	102	27,015	43,835	1.623
Percent of Total Employment		1.78	2.54	
Most Slowly Growing Industries				
Clay products manufacturers	351	5,170	4,175	0.808
Coffin & casket industry	258	1,215	975	0.802
Luggage handbag & small leather goods mf	179	5,200	4,165	0.801
Fabricated structural metal industry	302	14,630	11,575	0.791
Tobacco products manufacturers	153	7,755	5,915	0.763
Veneer & plywood mills	252	12,180	9,255	0.760
Man-made fibre, yarn & cloth mills	183	16,145	11,295	0.700
Leather glove factories	175	1,270	850	0.669
Abrasives manufacturers	357	2,680	1,785	0.666
Leather tanneries	172	3,275	2,165	0.661
Wool yarn & cloth mills	182	5,965	3,800	0.637
Mfrs. of household radio & tv receivers	334	6,205	3,695	0.595
Mfrs. of small electrical appliances	331	7,330	4,105	0.560
Cotton yarn & cloth mills	181	12,315	6,200	0.503
Misc. vehicle manufacturers	329	5,165	2,365	0.458
Percent of Total Employment		1.31	0.63	

Note: Industries among those referred to as "most slowly growing" may, in fact, have had negative growth rates -- i.e., they may have declined.

Table 6-6: The Most Rapidly and Most Slowly Growing Transportation, Communication and Other Utilities Industries, 1971-86

	SIC Code (1970)	Employment 1971	Employment 1986	Ratio 1986/71
Most Rapidly Growing Industries				
Misc. services incidental to transport	517	10,540	36,785	3.490
Other transportation	519	11,180	34,475	3.084
Services incidental to air transport	502	4,880	13,085	2.681
Other utilities	579	6,860	15,555	2.267
Radio & tv broadcasting	543	23,165	48,675	2.101
Urban transit systems	509	18,590	37,425	2.013
Air transport	501	28,230	52,280	1.852
Pipeline transport	515	4,460	7,105	1.593
Gas distribution	574	9,730	15,065	1.548
Other truck transport	507	94,435	138,625	1.468
Other storage & warehousing	527	6,655	9,520	1.431
Percent of Total Employment		2.69	3.53	
Most Slowly Growing Industries				
Telephone systems	544	73,845	105,085	1.423
Electric power	572	61,740	87,205	1.412
Water systems	576	6,280	8,755	1.394
Post Office	548	52,940	72,635	1.372
Highway & bridge maintenance	516	27,855	36,600	1.314
Moving & storage, used goods, uncrated	506	9,275	12,100	1.305
Taxicab operations	512	23,180	28,400	1.225
Services incidental to water transport	505	13,000	13,990	1.076
Railway transport	503	106,420	88,230	0.829
Water transport	504	21,140	17,105	0.809
Bus transport, interurban & rural	508	8,820	6,035	0.684
Grain elevators	524	8,615	5,390	0.626
Telegraph & cable systems	545	6,460	3,310	0.512
Percent of Total Employment		5.17	4.19	

Note: See Table 6-5.

Table 6-7: The Most Rapidly and Most Slowly Growing Trade Industries, 1971-86

	SIC Code (1970)	Employment 1971	Employment 1986	Ratio 1986/71
Most Rapidly Growing Industries				
Retail stores, n.e.s.	699	43,370	142,910	3.295
Electrical machinery, equipment & supplie	621	17,585	47,495	2.701
Book & stationery stores	691	7,360	17,545	2.384
Household furniture & appliance stores	676	34,555	75,590	2.188
Florists' shops	692	7,490	16,090	2.148
Clothing and dry goods stores, n.e.s.	669	19,575	41,890	2.140
Motor vehicles & accessories	619	26,950	54,035	2.005
Women's clothing stores	667	26,490	51,410	1.941
Machinery & equipment, n.e.s.	623	49,885	94,420	1.893
Jewellery stores	694	11,055	20,625	1.866
Paper & paper product	611	7,395	13,470	1.822
Drug stores	681	36,260	65,005	1.793
Motor vehicle repair shops	658	57,775	101,190	1.751
Hardware stores	673	19,900	34,800	1.749
Watch & jewellery repair shops	695	1,495	2,520	1.686
Percent of Total Employment		4.52	6.73	
Most Slowly Growing Industries				
Farm machinery & equipment	622	13,415	19,735	1.471
Apparel & dry goods	617	10,940	16,080	1.470
Metal and metal products, n.e.s.	625	8,335	12,175	1.461
Lumber & building materials	626	36,990	53,665	1.451
Tire, battery & accessories stores	652	20,160	28,990	1.438
Drugs & toilet preparations	616	8,300	11,895	1.433
Tobacconists	697	2,900	4,075	1.405
Hardware, plumbing & heating equipment	624	15,870	21,775	1.372
Men's clothing stores	665	15,455	19,445	1.258
General merchandise stores	642	217,495	242,085	1.113
Gasoline service stations	654	69,585	75,620	1.087
Tobacco products	615	3,005	2,910	0.968
Petroleum products	608	27,635	23,525	0.851
General merchandise	612	2,820	2,045	0.725
Coal & coke	606	725	500	0.690
Percent of Total Employment		5.59	4.62	

Note: See Table 6-5.

Table 6-8: The Most Rapidly and Most Slowly Growing Community, Business and Personal Service Industries, 1971-86

	SIC Code (1970)	Employment 1971	Employment 1986	Ratio 1986/71
Most Rapidly Growing Industries				
Computer services	853	4,405	57,300	13.008
Offices of management & business consulta	867	4,830	35,165	7.281
Diagnostic & therapeutic services, n.e.s.	826	6,290	42,470	6.752
Employment agencies & personnel suppliers	851	8,520	30,745	3.609
Motion picture production & distribution	842	4,225	15,195	3.596
Related health care institutions & welfar	822	76,215	267,125	3.505
Offices of para-medical personnel	824	7,560	26,450	3.499
Theatrical & other staged entertainment s	845	7,295	22,355	3.064
Automobile & truck rental	894	3,740	11,390	3.045
Blacksmithing & welding shops	896	5,725	16,250	2.838
Offices of dentists	825	14,825	41,945	2.829
Misc. services to business management	869	30,595	84,970	2.777
Advertising services	862	13,350	36,885	2.763
Miscellaneous services, n.e.s.	899	29,170	79,795	2.736
Restaurants, caterers & taverns	886	181,065	486,955	2.689
Percent of Total Employment		4.90	10.85	
Most Slowly Growing Industries				
Religious organizations	831	46,360	64,330	1.388
Hospitals	821	345,050	478,405	1.386
Funeral services	877	6,530	8,730	1.337
Elementary & secondary schools	802	401,005	515,805	1.286
Kindergartens & nursery schools	801	4,875	6,010	1.233
Misc. health services	827	5,675	6,810	1.200
Private households	873	51,775	58,320	1.126
Self-service laundries & dry cleaners	876	1,995	2,210	1.108
Vocational centers, trade schools & busin	804	7,040	7,535	1.070
Schools of art & of the performing arts	803	8,795	9,350	1.063
Shoe repair shops	871	3,225	3,285	1.019
Laundries, cleaner & presser (exc.self-se	874	35,570	36,180	1.017
Bowling alleys & billiard parlours	843	4,535	4,250	0.937
Motion picture theatres	841	9,245	8,340	0.902
Lodging houses & residential clubs	883	12,320	3,335	0.271
Percent of Total Employment		11.63	10.48	

Note: See Table 6-5.

CHAPTER 7: AGE-SEX PATTERNS OF INDUSTRIAL EMPLOYMENT

We now direct our attention to the age and sex characteristics of industrial employment. Our purpose is to describe industries in terms of those characteristics, note changes that have taken place, and identify unusual cases.

Age Distribution

Table 7-1 provides four summary measures of age distribution for each industry division. The measures are the percentage of employment accounted for by persons under the age of 35 (% <35), the percentage accounted for by those age 55 and over (% 55+), the mean age, and an index known as the "index of dissimilarity."

The percentage distribution measures are straightforward, as is the mean age. However, the index of dissimilarity (hereafter, ID) calls for a word of explanation. It is a measure invented by Duncan and Duncan (1955) that has long been popular among sociologists in analyses of discrimination and segregation. As applied to industry age groups, it is computed for each industry by calculating one-half of the sum of the absolute differences between the percentage of each age group in the industry and the percentage overall. Intuitively, it shows the proportion of employment within each industry group that would have to shift in order that the industry would have the same age distribution of employment as the economy as a whole. Thus, for example, the value 0.11 for primary industries in 1986 indicates that 11 per cent of the workers in those industries would have to exchange jobs with workers of other age groups (from other industries) in order to make the age distribution in primary industries the same as the average for all industries combined. Possible ID values range from 0.00 to 1.00. Generally speaking, values close to 0.00 indicate proximity to the overall distribution while values close to 1.00 indicate extreme discrepancies.

As Table 7-1 shows, the percentage of employed persons under 35 increased from 47.0 in 1971 to 51.8 in 1981, then declined to 48.9 in 1986. The initial increase coincided with the entry of the baby boom generation into the labour force. The subsequent decrease resulted from the fact that the oldest of the baby boomers had advanced beyond the age of 35 and had been replaced by the much smaller numbers of young people born during the "baby bust" of the 1960s. Almost all industry divisions followed this up-down pattern; trade alone did not decline in 1986 and the (presumably quite heterogeneous) "not specified" category experienced a perverse down-up sequence.

The magnitudes of the increase and subsequent decrease were not the same in all industry divisions. The smallest changes were in community, business and personal services (an increase of 2.6 per cent, decrease of 3.4); the largest were in mines, quarries and oil wells (increase of 8.7, decrease also of 8.7).

While the proportion under the age of 35 fluctuated around half of the total, the proportion aged 55 and over accounted for a much smaller and generally decreasing proportion: 14.5 per cent in 1971, 12.2 in 1981, and 11.5 in 1986. The downward trend reflects the tendency toward earlier retirement coupled with the labour force entry of the baby boomers. It was exhibited by all of the service industries except finance, insurance and

real estate. However, the primary industries behaved differently: in agriculture the proportion 55 and over increased from 1971 to 1981 and again from 1981 to 1986, and in forestry there was a slight increase from 1981 to 1986. The construction component of manufacturing and construction is also a notable exception.

The increase in agriculture may have resulted in part from a change in the treatment of unpaid family workers. Those who reported fewer than twenty hours per week were not included in the count of employed workers in 1971, but were in subsequent years. Their inclusion in 1981 and 1986 would have increased the counts in those years. Such changes aside, the proportions themselves are noteworthy: the proportion of older workers was more than twice as high in agriculture as in any of the other defined industry divisions in 1986.

Some persistent differences in age patterns are apparent. The proportion of young people in agriculture is consistently low and the proportion of older people consistently high, resulting in a mean age more than five years above the national average and the highest ID of any of the industry divisions. Fishing and trapping also had high proportions of older workers, although the differences were less extreme. A consideration in both cases is the relatively large fraction of self-employed in the industry, and the consequently reduced effect of compulsory retirement on the numbers of older workers.

The opposite age pattern is apparent in forestry and, to a lesser extent, in mines, quarries, and oil wells. In both of those divisions there is an over-representation of younger workers, an under-representation of older ones, and a mean age a year or so below the national average. Workers in both manufacturing and construction tend to be concentrated in their middle years: both younger and older workers are under-represented and the mean ages are close to the average.

The service industries as a whole exhibit age distributions that are quite similar to the overall Canadian distribution. However, there are considerable differences within services. For example, younger workers are consistently under-represented in division 7 (transportation, communication and other utilities) and, to a lesser extent, in division 11 (public administration and defence); apparently there have been relatively few entry-level jobs in those divisions.

Employment age pyramids are shown for the three broad categories of industries in Figures 7-1 to 7-3. Those for the primary industries are in 7-1. Comparison of Figure 7-1 with Figure 4-1, which shows employment pyramids for all industries combined, makes clear the unusual age-sex composition of primary employment. We note the persistent over-representation of men, especially older men, and the persistent under-representation of women, especially younger women. More generally, there is a persistent tendency for the primary industries (primarily agriculture) to have relatively high proportions of older and low proportions of younger workers, both male and female.

Similar pyramids are provided for the manufacturing and construction category in Figure 7-2. Perhaps the most impressive feature is how little the age-sex characteristics of the category have changed relative to those of the overall work force. We see, for example, the persistent over-representation of males and under-representation of females. There is also a hint of persistent but slight over-representation of middle-aged workers; it appears that those workers obtained their jobs during an earlier boom period, and then remained in

the industry and aged together from one census year to the next. By 1981 another wave of younger workers had joined the industry, and five years later they, too, were moving through the age structure.

As observed, the age-sex pattern of employment in service industries (collectively) differs little from the overall pattern (Figure 7-3 compared with Figure 4-1). At the all-services level, the only persistent difference of note is the continuing under-representation of males of all ages and the corresponding over-representation of females.

Figure 7-4 compares the age distribution of employment in the twelve industry divisions with the overall employment age distribution in each of the three census years. Specifically, it shows the difference between the percentage of employment accounted for by each age group in a given industry and the percentage that that group accounts for in overall employment. The main message conveyed by the figure is one of stability over time: for each industry division the percentage differences from the overall distribution are about the same in each of the three years. Thus, for example, agriculture has a considerable over-abundance of older workers and, except in the 15 to 19 age group, a concomitant shortfall of younger ones – a pattern that persists over the fifteen-year period. For other industry divisions the age-difference patterns persist but the differences themselves are not as strong as in agriculture. We see, for example, a relative abundance of workers in their twenties in division 4 (mines, quarries, and oil wells) and division 9 (finance, insurance and real estate) and in their 'teens in division 8 (trade). But most differences, though persistent, are of quite small magnitude – less than two percentage points. That such differences are maintained over time suggests a considerable amount of stability in the ways in which new entrants to the labour force are distributed across industries. We note that the distributions have been maintained without any significant element of policy intervention. Instead it appears that such stability in the relative age distributions were simply characteristic of industries, at least at this level of aggregation and over this particular historical period.

The stability of the age pattern of division 12 (unspecified or undefined industries) is also of interest. There is a distinctly u-shaped pattern, indicating that the youngest and the oldest workers are relatively likely to fall into this category while workers in other age groups are less likely.

Tables 7-2 to 7-4 provide summary measures of age distributions at a less aggregated industry level. As one might expect, there is considerable diversity among individual industries within all of the three broad categories. For example, tobacco products is notable for the large under-representation of young workers that had developed by the 1980s, a time when the industry was in relative decline, and for the associated increase in mean age (Table 7-3). Even so, the increase in the proportion of old workers in tobacco products was relatively modest. The change in the age distribution of employment was apparently associated with attrition, largely through the failure to replace young workers. Some of the manufacturing industries show continuing under-representation of young workers and over-representation of old ones – paper and allied industries, primary metals, transportation equipment, and non-metallic mineral products are examples. Still others show the reverse – a continuing over-representation of young workers and under-representation of old ones; the most obvious examples are rubber and plastic products, wood industries, and printing, publishing and allied industries. There is also considerable variation among the individual service industries; indeed, judging from the IDs, there is much greater age diversity in services than in manufacturing (even though the average values of the IDs are lower in

services). The most unusual distribution by far is that of religious organizations, for which the young are under-represented by about one-quarter, the old over-represented by a similar amount, and the mean age is some ten to twelve years above the national average. (This extraordinary distribution is, in part, a consequence of the industrial classification scheme: members of religious organizations who are teachers or health care workers, for example, would be counted as workers in those industries. Also, since workers in religious organizations tend to retain their associations past the usual age of retirement, the counts include many who are of advanced age.)

Insurance agencies and real estate have similar but less extreme age distributions, with mean ages about four years above the average. Both transportation and utilities also have relatively few young workers, as do governments generally, especially at the provincial and local levels. The federal government tends to have relatively few old workers, perhaps in part because of the early retirement opportunities available to members of the armed forces and federal public servants generally.

Two rapidly growing industries that have increased their concentration of young workers are accommodation and food services and amusement and recreation services. Both industries had about two-thirds of their employment under the age of 35 in 1986, as compared to the national average of 47 per cent. They will likely have to reduce those proportions substantially in the years ahead as the supply of younger workers continues to decline.

Perhaps the most interesting industry of all is "education and related", which went from a considerable over-representation of young and under-representation of old workers in 1971 to just the reverse in 1986. That is clearly the result of the pattern of growth associated with the industry. The relatively young age distribution in 1971 reflected the rapid growth in the educational system to accommodate the baby boom. By 1981, and more especially by 1986, the boom years were over and growth was slow. One consequence was the rapid aging of the work force: in 1971 the mean age of workers in education was 0.7 years below that of workers in service industries generally; by 1986 it was 3.5 years higher. (Further discussion of changes in the age distribution of teachers is provided in Chapter 11.) There was a similar development in health and welfare services, although less extreme.

Where are the greatest concentrations of younger and older workers? Table 7-5 shows the twenty industries in which young workers account for especially large proportions of total employment (upper panel) or especially small proportions (lower panel). The industries are ranked from highest to lowest, based on the 1986 proportions; only those 236 industries that employed 2,500 or more workers in all three years were included. (27 of a total of 264 industries were excluded for this reason.)

The 1986 proportions of young workers ranged from 73.1 per cent (motion picture theatres) down to 15.8 per cent (asbestos mines). The twenty industries with the heaviest concentrations of young workers accounted for 16.5 per cent of the total employment of such workers in 1986. At the other end of the scale, the industries with the lowest concentrations of young workers accounted for 9.1 per cent of their employment. While some industries do have heavy concentrations of young workers, the major observation is that such concentrations are uncommon. The future effects associated with "shortages" of younger workers are therefore likely to be spread rather generally across industries.

There are some other interesting points to observe in Table 7-5. One is the persistence of the employment proportions: most industries with unusually high proportions of workers under 35 in 1986 had unusually high proportions also in 1971 and 1981, and similarly for those industries with low proportions. A second point is that at least some industries have experienced substantial changes in the proportions. For example, in 1971 the computer services industry was a relatively new industry with just 4,400 workers, of whom 77 per cent were under 35; by 1986 it had 57,300 workers, of whom 64 per cent were under 35. In two of the education industries – post-secondary non-university and elementary and secondary schools – the proportion dropped sharply, from about 53 per cent to around 30. A third point is that industries with high proportions of young workers are concentrated in services, and especially in division 10 (community, business and personal services), while those with low proportions are concentrated in division 7 (transportation, communications and other utilities).

Similar information for workers 55 and over is presented in Table 7-6. In some ways this is the mirror image of the previous table: industries with unusually low proportions of young workers often have unusually high proportions of old ones (although that need not be the case). Thus we find that of the twenty industries with low proportions of workers under 35 in 1986, nine had high proportions 55 and over; of the twenty with high proportions under 35, twelve had low proportions 55 and over. There is again a general appearance of stability: industries with unusually high or low proportions of old workers in 1986 were likely to have been in the same position in earlier years. (There are also some cases of marked changes; for example, older workers in security and investigations services accounted for 40 per cent of employment in 1971 but only 21 per cent in 1986.) Overall, the proportion of older workers decreased, but for some industries it increased – for example, in water transport (a declining industry), cement manufacturers (a stable industry), offices of physicians and surgeons (a growing industry), and computer services (a rapidly growing industry).

Age Distribution and Growth

It is clear that there are systematic and persistent differences in the employment age proportions of typical industries. As we have seen, some industries have mostly younger workers while others have mostly older and tend to stay that way over time. To summarize the tendencies we have estimated a series of regression equations in which the proportion of an industry's employment in a given age group is related to the industry's average annual rate of growth since the previous census year and its proportions of young, middle, and old workers in that year. The results are presented in Table 7-7 for the three age groups.

Consider first the proportion under 35. The results are similar for each of the three periods for which the equations were estimated (1971-81, 1981-86, and 1971-86): the proportion under 35 is positively and strongly related to the rate of employment growth and to the proportion under 35 in the earlier year. For each of the middle and older groups, the estimates suggest a negative relationship with the growth rate and a positive relationship with the group's proportion in the earlier year. Put differently, there is a rather strong tendency for industries to maintain their original age structure, but at the same time for more rapid growth to increase the proportion of young workers and decrease the proportions of workers in the middle and older working years.

Sex Distribution

The growth in female employment has far outstripped that of males. But what has happened to its distribution across industries? As Table 7-8 shows, all industry divisions shared in the growth, but the sharing was such as to maintain differences. That is, industries with below-average female proportions (divisions 1 through 7 – primary industries; manufacturing and construction; transportation, communication and other utilities) were about the same number of percentage points below average in 1986 as they had been in 1971, while those with above-average proportions (divisions 8 through 10 – trade; finance, insurance and real estate; community, business and personal services) were about the same number of percentage points above.

The strength and stability of these differences is quite surprising: in a period of rapid employment growth (especially among women) and considerable changes in the age structure of employment, the female proportion remained about 30 percentage points below average in divisions 2-4 and 6 (forestry; fishing and trapping; mines; and construction), 16 to 17 points below in division 7 (transportation, communication and other utilities), and 11 to 14 points below in division 5 (manufacturing). At the same time, it remained 17 to 20 points above average in divisions 9 and 10 (finance, insurance, and real estate; community, business and personal services.) Only in division 11 (public administration and defence) was there a pronounced reduction in the difference.

The middle three columns of Table 7-8 show the distribution of female employment across industries. It is clear that women's employment has become increasingly concentrated in the service industries: their share increased from 71 per cent of all women's employment in 1971 to 81 per cent in 1986. Within services, more than half of female employment has remained in division 10 (community, business and personal services). Division 8 (trade) was next largest, with 17 per cent in 1986.

The increased concentration of employment in the service industries was not limited to women, of course, although the increase in male concentration has been much less pronounced. One indication of the trends is gained from a comparison of the employment growth rates for women and men in the various industries. The last three columns of Table 7-8 show the differences between the average annual male and female growth rates. Over the fifteen-year period as a whole, total female employment grew, on average, 2.4 per cent per year faster than total male employment. The growth of female employment was faster in all industry divisions but it exceeded male employment growth by especially large margins in the primary industries, other than agriculture, and in construction. (Of course, growth started from a very small base: even by 1986 only 2.1 per cent of all female employment was in those industries.) Other industry divisions in which the female growth rate was well above the male rate include 11, 7, and 9 (public administration and defence; transportation, communications and other utilities; finance, insurance and real estate) – again, industries in which the concentration of female employment has been below average. By contrast, the smallest excess of female over male growth rates occurred in division 10 (community, business and personal services), the division with the greatest concentration of female employment. Thus these trends are in the direction of reducing somewhat the differences between female and male industrial employment patterns, although the patterns remain substantially different.

Female workers tend to be younger than males, on average, although the difference dropped from almost 3 years in 1971 to 2 in 1986. (See Table 7-9.) Women in divisions 2, 4, 7, and 9 tend to be even younger than the average for all women, and considerably younger than men, although the differences have generally diminished over time.

Table 7-10 ranks industries in terms of the 1986 female percentages of employment, and shows the percentages also for earlier years; the top twenty and bottom twenty are shown in the table. (As before, small industries are excluded – in this case, those with fewer than 2,500 workers in any one of the three census years.) The female proportion ranges from a high of 97 per cent (in kindergartens and nursery schools) to a low of under 5 per cent (in highway and bridge maintenance). In the twenty most female-concentrated industries women accounted for 80.0 per cent of employment in 1986, up from 75.3 per cent in 1971 and 78.6 in 1981. Furthermore, these twenty industries accounted for approximately one-quarter of all female workers in each year. By comparison, the twenty least female-concentrated industries accounted for only about one per cent of female employment. Hence, gender concentration exceeds age concentration by a wide margin.

As might have been expected, high female proportions are associated largely with service industries and low proportions with primary and manufacturing industries. Here, too, we see evidence of stability: industries with high female proportions in 1986 also had high proportions in earlier years, and similarly for those with low proportions. Indeed, the extent of stability is quite remarkable. Of the twenty industries with the highest concentrations of female employment in 1986, sixteen were also in the top twenty in 1971, and the other four were ranked within the top thirty at the earlier date. There is also a high degree of stability among the least-concentrated rankings.

Net Retention Rates

The net retention rates, as introduced in Chapter 5, provide another view of industrial employment changes. They allow comparison of the employment of each age-sex group at two census dates, taking into account the aging that occurred in between. Thus, for example, the 1971-81 female net retention rate for 35 to 39-year-olds compares the employment of 35 to 39-year-old women in 1981 with the employment of 25 to 29-year-old women in 1971. Rates above 1.00 reflect mostly growth in the proportion of the cohort employed. As noted in Chapter 5, for all industries combined the rates exceed 1.00 for women in most age groups up to 45 to 49 or 50 to 54, and often by a wide margin. For older age groups the rates decline with age, much as they do for men.

The industry retention rates can be expressed relative to the overall rate for each sex. This calculation focuses attention on how the experience of each industry differs from the average. A value of 1.00 at all ages would indicate that the industry had average retention experience; values above 1.00 indicate that the industry increased its employment share of a particular age-sex group while values below 1.00 indicate a decrease. The results are presented in Table 7-11.

Consider males first. In agriculture (division 1) net retention is below average at younger ages and considerably above at older ones. That is, younger men were less likely to stay in agriculture and older men more likely. In consequence, agriculture's share of young male employment was declining while its share of older male employment was

increasing. The age-retention pattern is generally similar in division 8 (trade), but much less pronounced. Divisions 7 (transportation, communication and other utilities) and 11 (public administration and defence) show the reverse pattern: above-average tendencies to attract younger workers, below-average tendencies to retain older ones. Divisions 2, 4, 5, and 6 (forestry, mines, manufacturing, and construction), on the other hand, have relatively weak tendencies to retain their male workers at all ages. The age-retention patterns of divisions 9 and 10 (finance, insurance, and real estate; community, business and personal services) stand out sharply: the ratios are above average at all ages and exhibit a distinctly u-shaped pattern. (They are especially high at both the younger and older ages.)

The age-retention patterns for women reflect the industrial distribution of the very rapid growth of female employment. Above-average retention was characteristic of most ages in the earlier period (1971-81) in the service industries generally, and also in construction and in all primary industry divisions except agriculture; below-average retention occurred in agriculture and manufacturing. However, the later period (1981-86) is rather different. The age-retention ratios remained generally above one only in divisions 2 (forestry), 3 (fishing and trapping), and 10 (community, business and personal services). They turned from below to above one in agriculture (perhaps largely, if not entirely, because of the definitional change discussed earlier that affected unpaid family workers and introduced inconsistencies between the 1971 and subsequent censuses). In other divisions the rates were mixed – below one at some ages, above at others – or else strongly below, as in the case of division 4 (mines).

Figure 7-1: Employment Age Pyramids, 1971, 1981, and 1986 -- Primary Industries

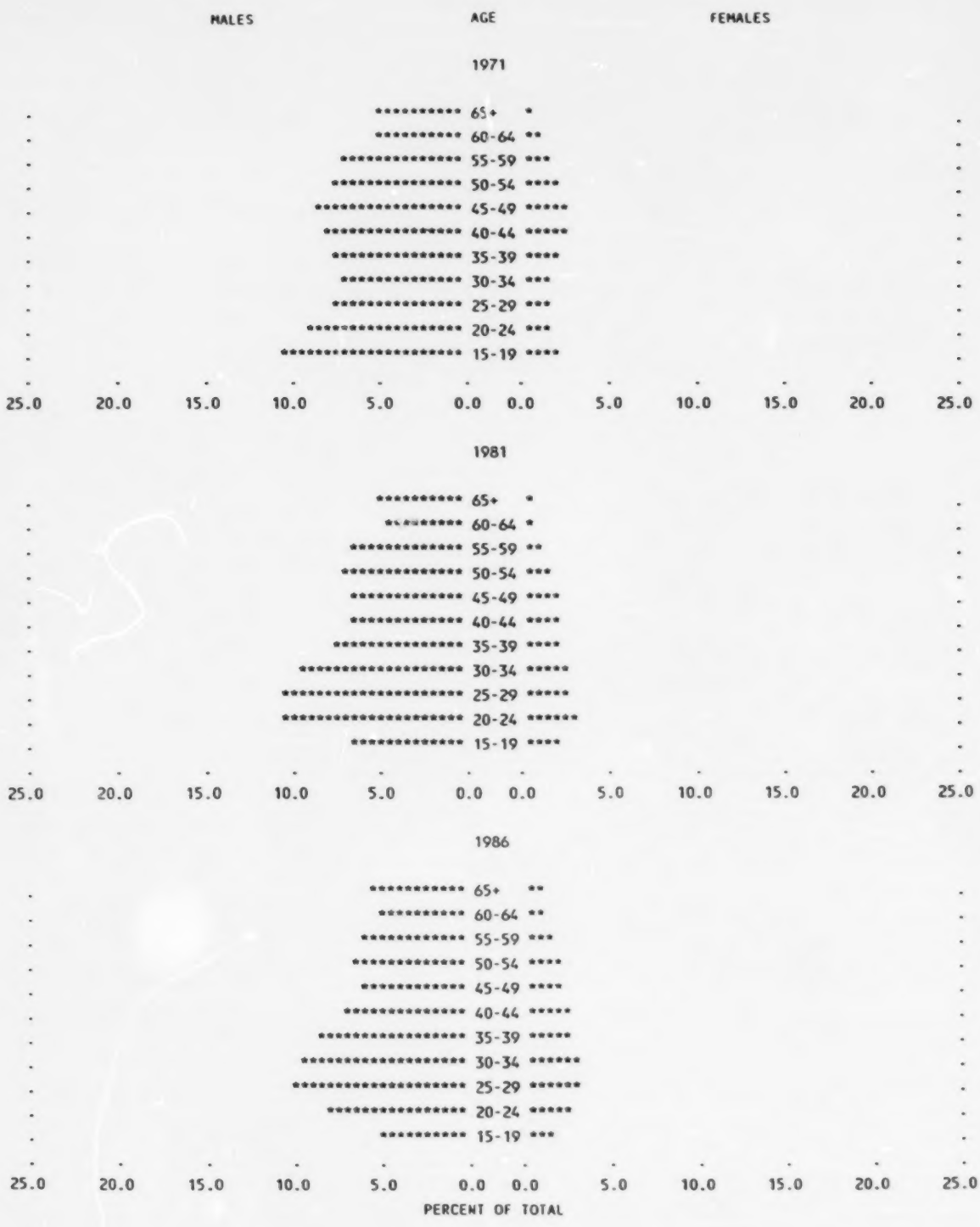


Figure 7-2: Employment Age Pyramids, 1971, 1981, and 1986 -- Manufacturing and Construction Industries

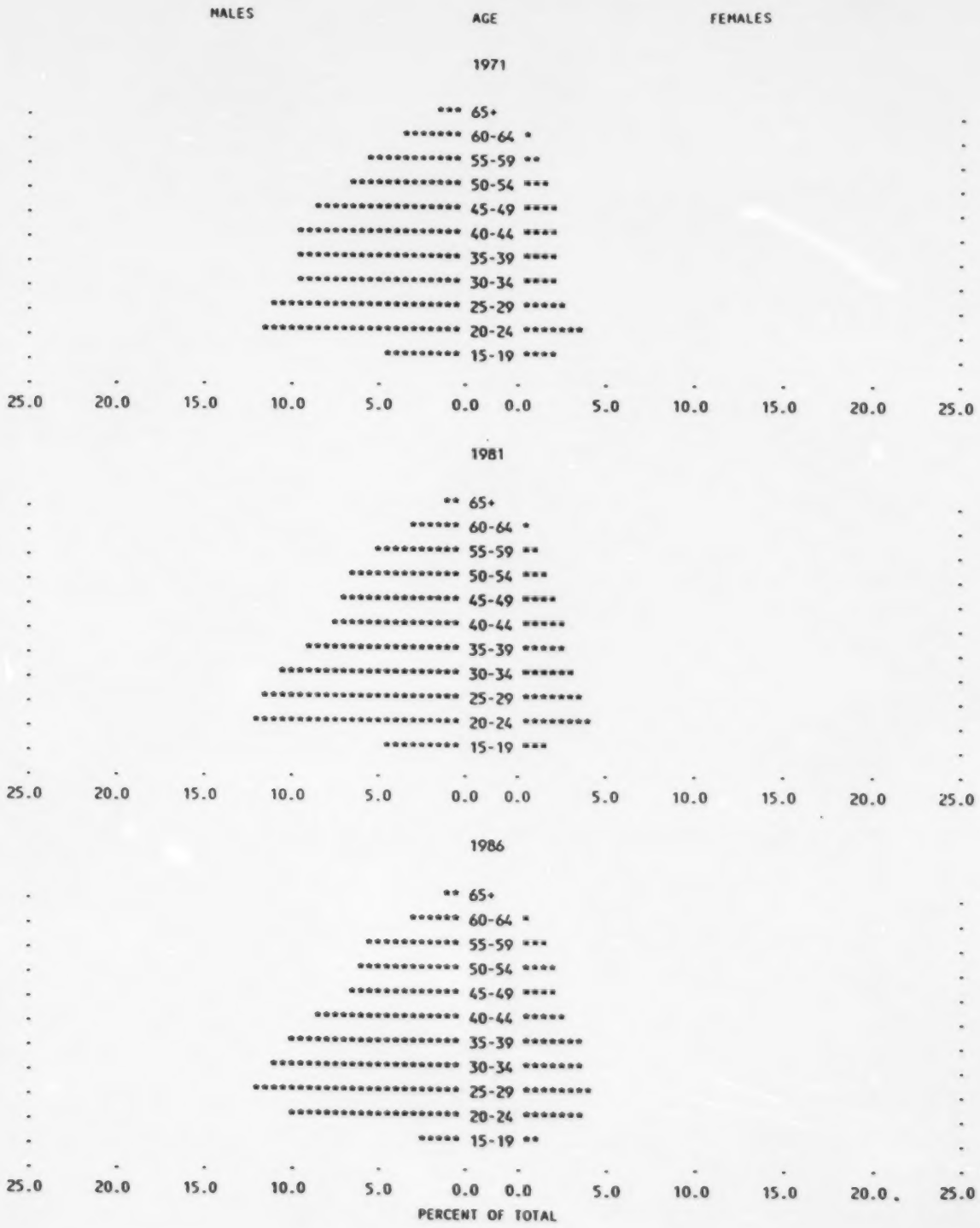


Figure 7-3: Employment Age Pyramids, 1971, 1981, and 1986 -- Service Industries

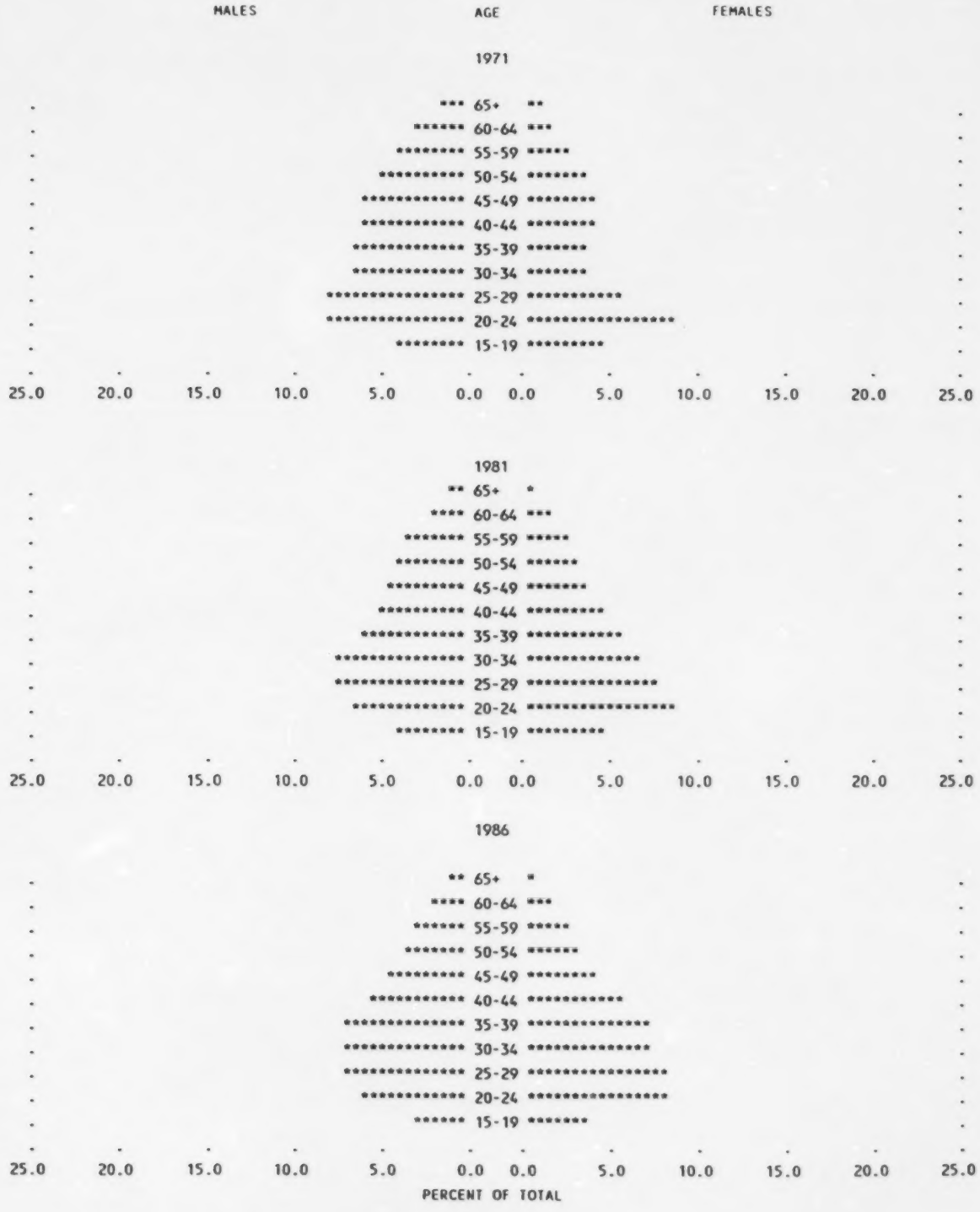


Figure 7–4: Percentage Differences from Overall Distribution, Age Groups, 1971, 1981, and 1986 –– Industry Divisions

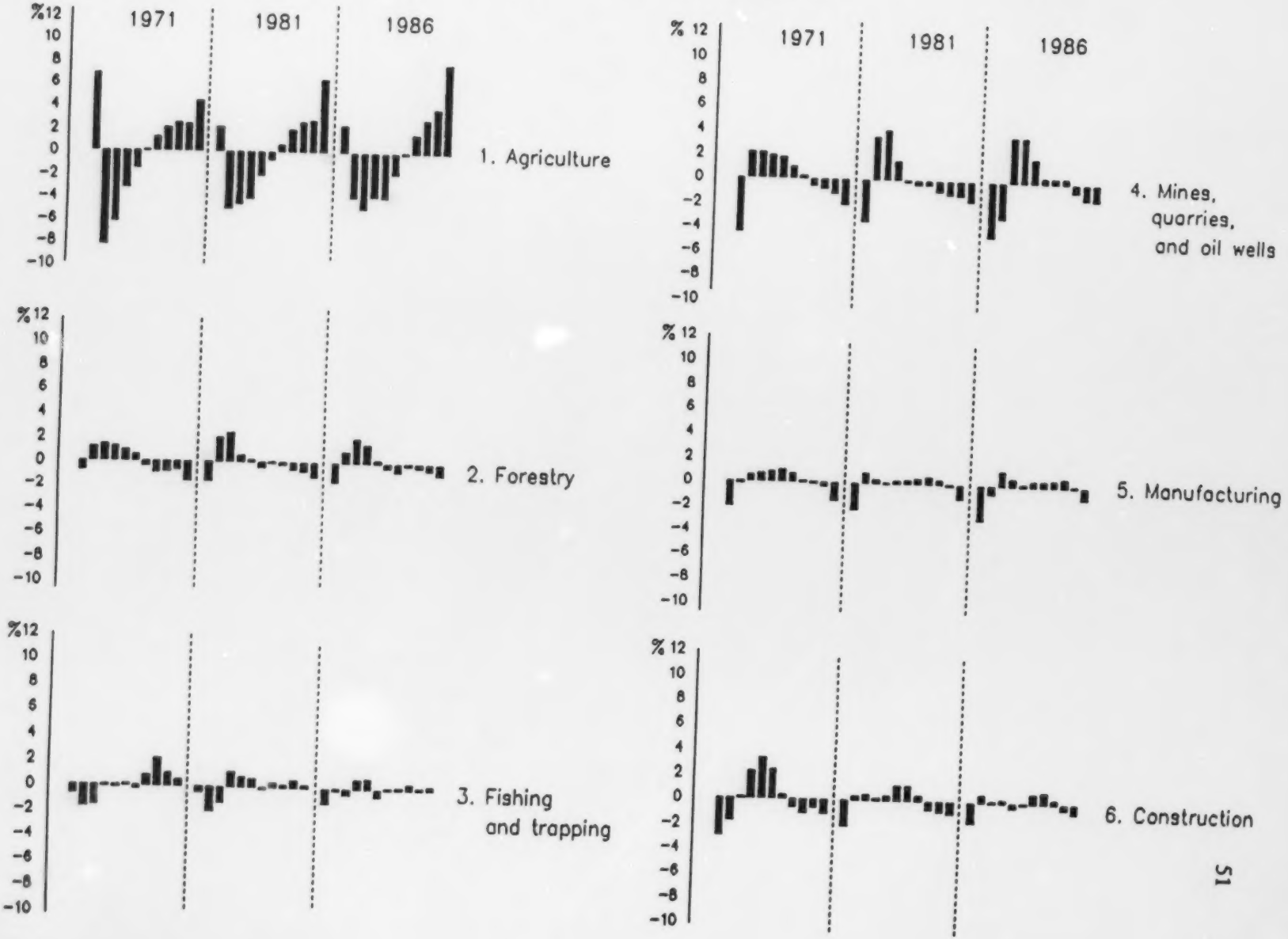


Figure 7–4: (Continued)

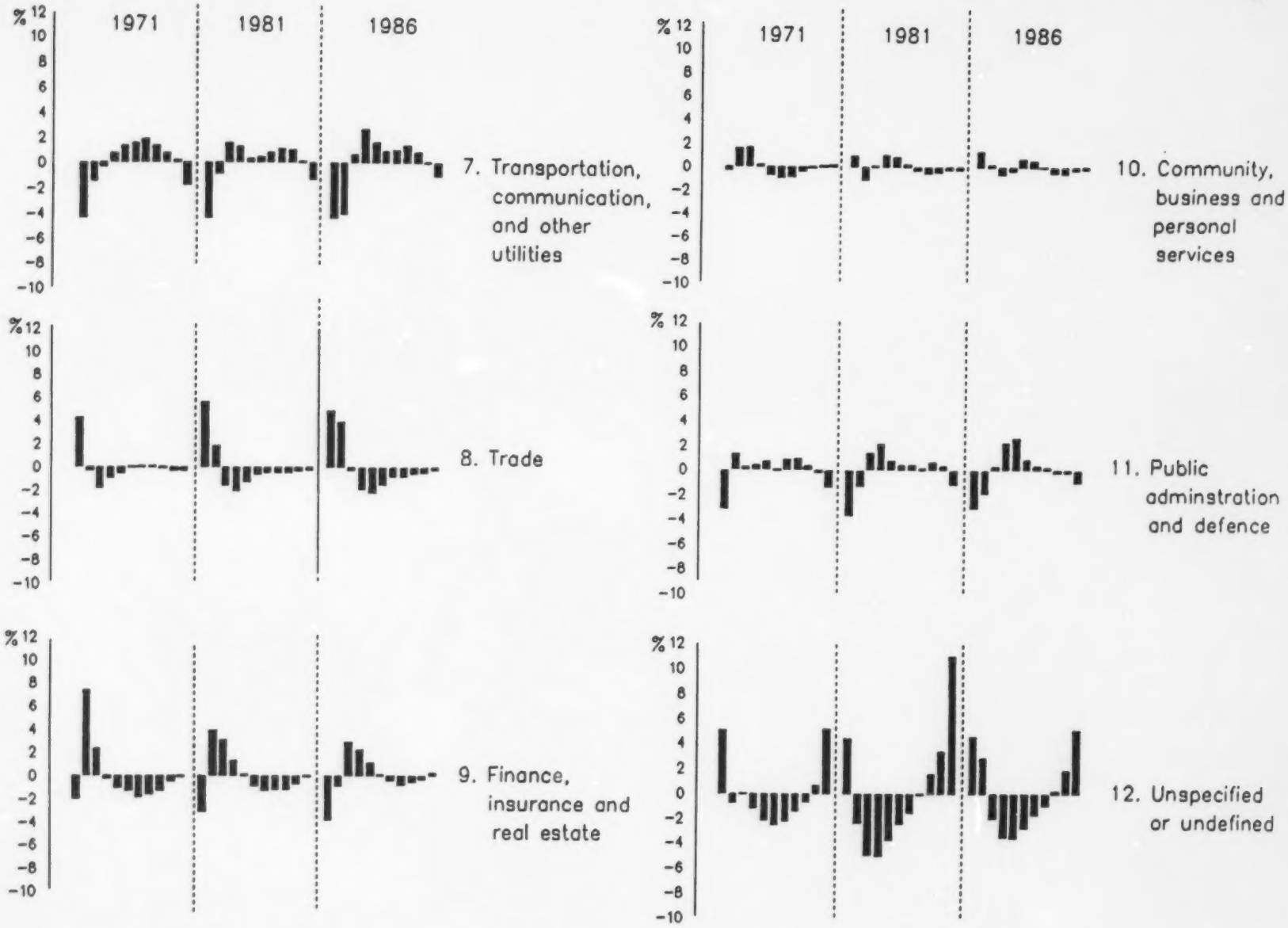


Table 7-1: Summary Measures of the Age Distribution of Employment, 1971, 1981, and 1986 -- Industry Divisions

	% <35			% 55+			Mean Age			Index of Dissimilarity		
	1971	1981	1986	1971	1981	1986	1971	1981	1986	1971	1981	1986
Primary Industries	40.0	46.4	42.5	19.9	18.1	20.0	39.7	38.6	39.9	0.13	0.08	0.11
1 - Agriculture	36.1	40.1	38.4	23.8	24.1	26.3	41.1	41.0	41.9	0.21	0.17	0.20
2 - Forestry	50.1	55.2	51.8	11.2	9.5	9.6	36.2	35.2	35.9	0.05	0.05	0.05
3 - Fishing & trapping	42.9	49.2	47.7	18.2	13.2	12.3	38.9	37.1	37.2	0.05	0.04	0.03
4 - Mines (inc. milling), quarries & oil wells	48.8	57.5	48.8	10.3	8.3	8.2	36.5	34.7	36.7	0.09	0.09	0.11
Manufacturing and Construction Industries	45.7	50.8	47.6	12.4	11.1	11.2	37.4	36.3	37.1	0.07	0.05	0.05
5 - Manufacturing industries	46.1	50.8	47.3	12.6	11.5	11.3	37.3	36.4	37.2	0.05	0.04	0.05
6 - Construction industry	44.6	50.8	48.4	11.6	9.8	10.7	37.5	36.2	36.8	0.09	0.05	0.03
Service Industries	48.2	53.1	49.9	13.9	11.3	10.5	37.1	35.8	36.2	0.04	0.04	0.05
7 - Transportation, communication & other utilities	41.6	49.4	43.9	13.7	11.9	11.4	38.6	37.1	38.2	0.09	0.07	0.10
8 - Trade	48.2	55.6	55.6	13.8	11.2	10.2	36.7	34.7	34.7	0.05	0.09	0.11
9 - Finance, insurance & real estate	54.6	56.9	49.4	12.7	10.3	10.9	35.7	35.2	37.0	0.10	0.09	0.07
10 - Community, business & personal	50.1	52.7	49.3	14.5	11.2	10.4	36.9	35.8	36.2	0.05	0.04	0.04
11 - Public administration & defence	45.9	50.2	46.4	13.2	12.0	10.1	37.6	36.9	37.2	0.05	0.07	0.07
Unspecified or Undefined Industries	50.2	43.8	50.8	19.7	28.1	18.7	38.0	41.3	37.6	0.12	0.21	0.15
All Industries	47.0	51.8	48.9	14.5	12.2	11.5	37.5	36.3	36.7	0.00	0.00	0.00

Table 7-2: Summary Measures of the Age Distribution of Employment, 1971, 1981, and 1986 -- Primary Industries

	% <35			% 55+			Mean Age			Index of Dissimilarity		
	1971	1981	1986	1971	1981	1986	1971	1981	1986	1971	1981	1986
Div.1 - Agriculture	36.1	40.1	38.4	23.8	24.1	26.3	41.1	41.0	41.9	0.21	0.17	0.20
Farms	35.8	39.2	37.6	24.0	24.7	27.0	41.2	41.3	42.2	0.21	0.18	0.21
Services incidental to agriculture	50.7	63.2	58.9	13.5	8.9	9.3	35.9	33.2	34.1	0.07	0.11	0.10
Div.2 - Forestry	50.1	55.2	51.8	11.2	9.5	9.6	36.2	35.2	35.9	0.05	0.05	0.05
Logging	48.6	52.4	46.1	11.1	9.8	11.4	36.5	35.9	37.5	0.06	0.05	0.07
Forestry services	58.0	64.0	63.2	11.9	8.5	6.2	34.2	33.0	32.8	0.12	0.12	0.14
Div.3 - Fishing & trapping	42.9	49.2	47.7	18.2	13.2	12.3	38.9	37.1	37.2	0.05	0.04	0.03
Fishing	43.1	48.8	47.5	18.0	13.3	12.7	38.9	37.1	37.3	0.05	0.04	0.02
Fishery services	39.8	53.9	53.8	18.9	10.4	6.1	39.8	36.1	35.0	0.12	0.08	0.11
Hunting & trapping	39.5	41.2	31.3	17.8	20.0	21.9	39.4	40.5	42.7	0.10	0.17	0.23
Div.4 - Mines (inc. milling), quarries &	48.8	57.5	48.8	10.3	8.3	8.2	36.5	34.7	36.7	0.09	0.09	0.11
Metal mines	50.0	51.8	38.1	11.0	9.9	9.8	36.5	36.2	39.1	0.09	0.07	0.16
Mineral fuels	46.8	62.2	52.9	8.2	6.3	6.3	36.5	33.5	35.7	0.12	0.14	0.15
Non-metal mines (exc. coal mines)	42.9	50.0	40.5	12.8	12.5	11.3	38.2	37.0	38.7	0.08	0.07	0.11
Quarries and sand pits	40.1	46.4	43.2	15.3	12.0	15.7	39.1	37.6	39.1	0.09	0.07	0.10
Services incidental to mining	56.2	67.7	61.7	7.2	5.2	5.9	34.3	31.7	33.7	0.14	0.17	0.16
All Primary Industries	40.0	46.4	42.5	19.9	18.1	20.0	39.7	38.6	39.9	0.13	0.08	0.11

Table 7-3 : Summary Measures of the Age Distribution of Employment, 1971, 1981, and 1986 -- Manufacturing and Construction Industries

	% <35			% 55+			Mean Age			Index of Dissimilarity		
	1971	1981	1986	1971	1981	1986	1971	1981	1986	1971	1981	1986
Div.5 - Manufacturing	46.1	50.8	47.3	12.6	11.5	11.3	37.3	36.4	37.2	0.05	0.04	0.05
Food & beverage industries	47.2	52.8	50.1	13.4	11.1	11.2	37.0	35.7	36.4	0.02	0.02	0.03
Tobacco products industries	43.3	34.7	32.2	13.5	14.9	12.2	38.3	40.5	40.8	0.09	0.19	0.19
Rubber & plastics products industries	51.1	55.9	54.2	9.2	8.3	8.1	35.7	34.7	35.1	0.08	0.06	0.07
Leather industries	50.5	53.5	49.0	14.0	12.2	11.6	36.3	35.7	36.7	0.06	0.06	0.04
Textile industries	47.4	50.2	47.6	13.2	12.2	11.2	37.1	36.4	37.1	0.02	0.05	0.04
Knitting mills	50.6	50.6	46.1	13.0	10.8	11.9	36.1	36.1	37.7	0.04	0.04	0.05
Clothing industries	46.9	48.0	44.9	14.6	11.5	11.3	37.2	37.0	37.6	0.03	0.05	0.04
Wood industries	47.7	57.4	53.4	14.3	10.2	10.6	37.0	34.6	35.8	0.03	0.07	0.06
Furniture & fixture industries	45.4	52.6	51.5	14.6	10.8	11.1	37.8	35.9	36.2	0.04	0.03	0.05
Paper & allied industries	43.3	48.0	42.6	13.0	12.7	13.3	38.1	37.3	38.7	0.07	0.06	0.09
Printing, publishing & allied ind's	52.1	53.5	51.2	12.9	10.2	10.1	35.6	35.7	36.2	0.05	0.03	0.04
Primary metal industries	41.1	48.5	39.7	13.3	13.2	13.1	38.8	37.4	39.3	0.09	0.06	0.13
Metal fabricating ind's (ex. m&t eqpt)	46.0	51.2	47.7	11.6	11.3	11.9	37.3	36.2	37.1	0.07	0.04	0.04
Machinery ind's (ex. electrical mach)	46.7	51.0	48.0	11.1	11.5	10.4	37.4	36.4	37.0	0.09	0.06	0.07
Transportation equipment industries	43.4	46.2	43.4	12.2	11.6	11.9	38.2	37.4	38.2	0.11	0.07	0.08
Electrical products industries	46.7	48.9	46.4	9.8	12.0	10.6	37.0	37.0	37.3	0.09	0.06	0.07
Non-metallic mineral products ind's	43.0	47.2	43.1	12.0	12.5	13.7	37.9	37.5	38.5	0.08	0.06	0.07
Petroleum & coal products industries	40.8	50.4	44.1	12.4	10.6	8.4	38.5	36.7	37.5	0.10	0.08	0.11
Chemical & chemical products ind's	44.4	50.0	45.7	12.4	12.0	10.9	37.9	36.8	37.6	0.08	0.06	0.08
Misc. manufacturing industries	48.2	52.3	49.9	12.2	11.2	11.4	36.8	36.1	36.7	0.04	0.03	0.03
Div.6 - Construction	44.6	50.8	48.4	11.6	9.8	10.7	37.5	36.2	36.8	0.09	0.05	0.03
General contractors	42.8	48.7	46.2	11.9	10.8	11.6	37.9	36.8	37.5	0.09	0.05	0.05
Special-trade contractors	46.3	52.2	49.7	11.3	9.2	10.2	37.1	35.8	36.4	0.09	0.05	0.03
All Manufacturing and Construction	45.7	50.8	47.6	12.4	11.1	11.2	37.4	36.3	37.1	0.07	0.05	0.05

Table 7-4 : Summary Measures of the Age Distribution of Employment, 1971, 1981, and 1986 -- Service Industries

	% <35			% 55+			Mean Age			Index of Dissimilarity		
	1971	1981	1986	1971	1981	1986	1971	1981	1986	1971	1981	1986
Div.7 - Transportation, communication & other utilities	41.6	49.4	43.9	13.7	11.9	11.4	38.6	37.1	38.2	0.09	0.07	0.10
Transportation	37.9	46.6	42.7	15.5	12.9	12.6	39.8	37.8	38.6	0.12	0.08	0.09
Storage	43.6	56.3	52.7	16.5	12.4	10.6	38.4	35.3	36.1	0.06	0.09	0.06
Communication	49.8	54.9	46.8	10.0	9.9	8.7	36.2	35.7	37.4	0.07	0.08	0.13
Electric power, gas & water utilities	43.1	48.7	42.9	12.4	12.1	11.0	38.1	37.3	38.3	0.08	0.09	0.11
Div.8 - Trade	48.2	55.6	55.6	13.8	11.2	10.2	36.7	34.7	34.7	0.05	0.09	0.11
Wholesale trade	46.4	53.4	51.0	13.5	11.1	10.8	37.5	35.8	36.3	0.04	0.03	0.04
Retail trade	48.8	56.5	57.3	13.9	11.2	10.0	36.4	34.3	34.0	0.08	0.12	0.14
Div.9 - Finance, insurance & real estate	54.6	56.9	49.4	12.7	10.3	10.9	35.7	35.2	37.0	0.10	0.09	0.07
Finance industries	63.8	65.5	56.6	8.8	5.8	6.3	32.9	32.5	34.7	0.18	0.17	0.14
Insurance carriers	57.6	60.4	52.4	10.4	9.4	9.4	34.5	34.3	36.1	0.12	0.12	0.09
Insurance agencies & real estate ind.	35.7	41.3	37.1	21.3	18.0	18.5	41.4	39.9	40.7	0.12	0.11	0.12
Div.10 - Community, business & personal	50.1	52.7	49.3	14.5	11.2	10.4	36.9	35.8	36.2	0.05	0.04	0.04
Education & related services	53.1	42.4	32.9	12.0	11.0	10.9	36.4	38.4	39.7	0.13	0.17	0.18
Health & welfare services	50.1	51.4	46.4	14.0	11.5	10.5	36.9	36.6	37.3	0.07	0.06	0.08
Religious organizations	20.8	22.6	25.7	37.4	36.5	33.1	48.2	47.7	46.3	0.28	0.32	0.28
Amusement & recreation services	54.9	66.5	66.1	16.3	10.2	8.5	35.1	31.7	31.7	0.17	0.19	0.19
Services to business management	51.5	56.9	52.1	12.7	10.4	10.3	36.7	35.3	36.2	0.10	0.10	0.08
Personal services	50.4	53.6	53.9	18.7	14.0	11.3	36.9	35.7	35.1	0.13	0.09	0.10
Accommodation & food services	48.9	64.6	67.3	14.4	8.1	7.0	36.2	31.3	30.6	0.10	0.22	0.26
Miscellaneous services	44.0	52.2	51.0	16.5	12.8	12.0	38.5	36.2	36.3	0.03	0.01	0.03
Div.11 - Public administration & defence	45.9	50.2	46.4	13.2	12.0	10.1	37.6	36.9	37.2	0.05	0.07	0.07
Federal administration	46.9	51.4	49.4	10.8	11.2	8.9	36.9	36.4	36.3	0.07	0.06	0.06
Provincial administration	47.1	49.9	42.9	15.9	12.7	11.0	37.9	37.2	38.1	0.08	0.08	0.10
Local administration	42.2	48.7	45.4	15.6	12.7	11.1	38.9	37.3	37.5	0.05	0.05	0.06
Other government offices	39.3	40.5	36.9	15.2	16.0	13.8	39.4	39.9	39.5	0.10	0.13	0.15
All Service Industries	48.2	53.1	49.9	13.9	11.3	10.5	37.1	35.8	36.2	0.04	0.04	0.05

Table 7-5: Industries with the Highest and Lowest 1986 Proportions of Young Workers (under 35), 1971, 1981, and 1986

	SIC Div.	% under 35 1971	1981	1986
Motion picture theatres	10	56.7	70.3	73.1
Gasoline service stations	8	62.1	69.7	71.9
Restaurants, caterers & taverns	10	55.0	68.8	71.8
Shoe stores	8	56.6	67.0	68.7
Misc. amusement & recreational services	10	53.9	66.8	67.7
Golf clubs & country clubs	10	53.7	63.2	67.1
Automobile & truck rental	10	54.3	67.6	66.9
Theatrical & other staged entertainment	10	69.5	72.5	65.9
Contract drilling for petroleum	4	62.2	70.8	64.1
Computer services	10	77.1	69.7	63.9
Forestry services	2	58.0	64.0	63.2
Food stores	8	56.2	62.1	62.9
Drug stores	8	50.1	59.1	62.5
Machinery & equipment rental	10	55.0	57.7	61.1
Moving & storage, used goods, uncrated	7	48.5	61.6	61.0
Misc. services incidental to mining	4	54.1	67.3	61.0
Tire, battery & accessories stores	8	60.2	65.6	60.4
Sash, door & other millwork plants	5	47.1	61.3	59.6
Wooden box factories	5	47.5	58.7	59.6
Barber & beauty shops	10	60.3	60.7	59.6
All Highest Proportion Industries		56.4	65.8	66.7
Farms	1	35.8	39.2	37.5
Railroad rolling stock industry	5	32.8	47.4	37.4
Taxicab operations	7	33.3	41.5	36.8
Insurance & real estate agencies	9	38.5	43.9	36.8
Urban transit systems	7	31.7	41.9	36.3
Bus transport, interurban & rural	7	35.0	45.3	36.3
Telegraph & cable systems	7	47.0	44.9	35.6
Post-secondary non-university education	10	52.5	43.1	34.2
Shipbuilding & repair	5	30.5	43.5	34.2
Water transport	7	37.7	40.1	34.1
Highway & bridge maintenance	7	31.2	35.7	34.1
Iron mines	4	50.3	52.7	32.8
Miscellaneous metal mines	4	52.1	50.5	32.7
Offices of physicians and surgeons	10	35.6	37.5	32.2
Cement manufacturers	5	35.6	43.2	31.7
Services incidental to water transport	7	29.3	32.4	31.6
Tobacco products manufacturers	5	44.2	35.0	30.0
Elementary & secondary schools	10	53.2	40.2	28.1
Religious organizations	10	20.8	22.6	25.6
Asbestos mines	4	38.4	41.1	15.8
All Lowest Proportion Industries		41.7	39.9	32.9

Note: Industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 7-6: Industries with the Highest and Lowest 1986 Proportions of Older Workers (55+), 1971, 1981, and 1986

	SIC Div.	% 55 and over 1971	1981	1986
Religious organizations	10	37.4	36.5	33.1
Farms	1	24.0	24.7	27.0
Funeral services	10	27.8	26.4	23.5
Real estate operators	9	27.9	21.8	22.5
Copper & copper alloy rolling, casting	5	16.8	20.2	22.0
Fur goods industry	5	28.1	23.4	21.7
Security & investigation services	10	39.5	32.6	21.0
Services incidental to water transport	7	21.1	20.8	20.8
Shipbuilding & repair	5	23.2	17.6	19.7
Water transport	7	1[illegible].8	16.7	19.0
Investment & holding companies	9	16.7	14.9	18.2
Jewellery stores	8	22.2	19.0	18.2
Lodging houses & residential clubs	10	37.5	23.9	18.1
Offices of physicians and surgeons	10	16.0	16.7	18.0
Highway & bridge maintenance	7	22.3	20.4	18.0
Cement manufacturers	5	13.5	13.2	17.4
Stone quarries	4	15.5	11.9	17.1
Water systems	7	20.0	18.9	16.9
Clay products manufacturers	5	15.6	15.1	16.9
Railroad rolling stock industry	5	20.5	13.6	16.8
All Highest Proportion Industries		34.6	39.5	37.2
Air transport	7	6.6	7.2	7.2
Machinery & equipment rental	10	8.0	7.7	7.1
Food stores	8	11.0	7.8	6.9
Defence services	11	6.2	8.1	6.5
Barber & beauty shops	10	12.1	7.8	6.4
Misc. services incidental to mining	4	8.4	5.3	6.3
Forestry services	2	11.9	8.5	6.2
Motion picture production & distribution	10	11.4	7.8	6.2
Gasoline service stations	8	9.4	6.5	6.1
Moving & storage, used goods, uncrated	7	9.6	8.1	6.0
Automobile & truck rental	10	9.9	6.1	6.0
Theatrical & other staged entertainment	10	7.3	5.4	6.0
Crude petroleum & natural gas industry	4	5.9	5.4	6.0
Telephone systems	7	4.8	5.5	5.5
Restaurants, caterers & taverns	10	10.3	5.9	5.2
Contract drilling for petroleum	4	3.1	4.6	5.1
Kindergartens & nursery schools	10	11.5	8.1	4.8
Bank & other deposit accepting estab'ts	9	7.0	4.3	4.6
Office & store machinery manufacturers	5	4.6	4.3	4.2
Computer services	10	1.9	2.1	2.3
All Lowest Proportion Industries		8.7	6.2	5.6

Note: Industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 7-7: Regression Equations for Industry Age Proportions

Inter-censal Period	Independent Variable g	Ey	Em	Eo	Constant	$\bar{R}^2$
Dependent Variable: Percentage under 35						
1971-81	0.79				48.9	0.14
	(6.17)				(75.50)	
	0.39	0.89	0.11	0.37		0.65
	(4.57)	(39.6)	(3.38)	(7.04)		
1981-86	0.51				48.12	0.10
	(5.14)				(94.12)	
	0.28	0.99	-0.22	0.40		0.82
	(6.09)	(57.2)	(6.48)	(7.03)		
1971-86	0.96				45.9	0.15
	(6.42)				(73.44)	
	0.53	0.84	-0.02	0.64		0.49
	(4.39)	(27.3)	(0.37)	(8.83)		
Dependent Variable: Percentage 35-54						
1971-81	-0.40				37.5	0.07
	(4.32)				(81.36)	
	-0.22	0.14	0.75	0.03		0.51
	(3.17)	(7.49)	(28.4)	(0.71)		
1981-86	-0.42				40.13	0.10
	(5.27)				(98.49)	
	-0.24	0.03	1.11	-0.15		0.73
	(5.53)	(1.93)	(34.7)	(2.71)		
1971-86	-0.65				41.60	0.10
	(5.28)				(81.29)	
	-0.38	0.19	0.84	-0.09		0.40
	(3.64)	(7.01)	(21.5)	(1.44)		
Dependent Variable: Percentage 55 and over						
1971-81	-0.39				13.53	0.10
	(5.17)				(35.74)	
	-0.16	-0.03	0.14	0.60		0.80
	(4.25)	(2.84)	(9.79)	(26.4)		
1981-86	-0.09				11.71	0.01
	(1.85)				(47.45)	
	-0.03	-0.02	0.10	0.75		0.82
	(1.51)	(2.27)	(6.59)	(28.7)		
1971-86	-0.30				12.45	0.07
	(4.20)				(41.32)	
	-0.14	-0.03	0.18	0.45		0.65
	(2.96)	(2.68)	(10.4)	(16.3)		

Note: g is annual average percentage growth in the period indicated; Ey, Em, and Eo are the beginning-of-period percentages in the young, middle, and old employment age groups; $\bar{R}^2$ is the coefficient of determination, adjusted for degrees of freedom; figures in brackets are t-ratios (absolute values).

Table 7-8: Distribution and Relative Rates of Growth of Female Employment, 1971, 1981, and 1986 -- Industry Divisions

	% Female in Industry			% of Total Female Employment			Annual Growth Rate -- Female less Male		
	1971	1981	1986	1971	1981	1986	1971	1981	1986
Primary Industries	17.7	19.4	22.9	4.4	3.3	3.5	1.3	4.3	2.6
1 - Agriculture	23.1	23.8	27.6	3.9	2.5	2.7	0.4	4.1	1.6
2 - Forestry	4.9	11.4	13.6	0.1	0.2	0.2	9.7	4.1	7.8
3 - Fishing & trapping	3.4	8.3	12.9	0.0	0.1	0.1	10.1	10.4	10.2
4 - Mines (inc. milling), quarries & oil wells	6.7	14.2	15.5	0.3	0.6	0.5	8.9	2.0	6.5
Manufacturing and Construction Industries	18.9	22.7	24.1	14.1	13.9	12.6	3.2	1.5	2.8
5 - Manufacturing Industries	23.1	26.9	28.3	13.2	12.4	11.2	2.1	1.3	1.9
6 - Construction Industry	5.0	9.6	10.7	0.9	1.4	1.3	7.4	2.3	5.7
Service Industries	42.0	48.6	50.3	71.4	79.4	80.8	4.1	1.5	3.8
7 - Transportation, communication & other utilities	16.8	23.4	24.9	3.9	4.7	4.5	4.3	1.7	3.4
8 - Trade	36.2	42.8	43.7	15.5	17.5	17.0	2.9	0.8	2.2
9 - Finance, insurance & real estate	50.9	60.6	60.2	6.3	8.1	7.7	4.2	-0.3	2.7
10 - Community, business & personal	57.7	60.0	61.1	40.1	42.2	44.6	1.0	0.9	1.0
11 - Public administration & defence	25.5	36.3	39.2	5.6	6.8	7.0	5.3	2.5	4.4
Unspecified or Undefined Industries	44.9	44.5	44.9	10.1	3.4	3.1	-0.2	0.3	0.0
All Industries	34.3	40.1	42.6	100.0	100.0	100.0	2.6	2.1	2.4

Table 7-9: Mean Ages of Female Workers and Differences from Male Mean Ages, 1971, 1981, and 1986 -- Industry Divisions

	Females			Female-Male Diff.		
	1971	1981	1986	1971	1981	1986
Primary Industries	40.2	36.4	38.7	0.6	-2.8	-1.5
1 - Agriculture	41.0	38.2	40.3	-0.1	-3.6	-2.1
2 - Forestry	34.4	32.3	33.6	-1.8	-3.3	-2.7
3 - Fishing & trapping	37.8	34.2	35.3	-1.2	-3.1	-2.1
4 - Mines (inc. milling), quarries & oil wells	32.3	30.7	33.3	-4.6	-4.7	-4.1
Manufacturing and Construction Industries	35.4	35.1	36.2	-2.4	-1.6	-1.2
5 - Manufacturing industries	35.3	35.1	36.1	-2.6	-1.8	-1.5
6 - Construction industry	36.6	35.4	36.7	-0.9	-0.9	-0.1
Service Industries	35.7	34.5	35.2	-2.5	-2.4	-2.0
7 - Transportation, communication & other utilities	33.8	33.8	35.6	-5.8	-4.3	-3.5
8 - Trade	37.1	34.8	34.5	0.6	0.1	-0.2
9 - Finance, insurance & real estate	31.6	32.3	34.7	-8.3	-7.3	-5.7
10 - Community, business & personal services	35.9	35.0	35.6	-2.5	-2.0	-1.5
11 - Public administration & defence	35.7	34.3	35.1	-2.5	-4.1	-3.4
Unspecified or Undefined Industries	38.8	41.9	37.5	1.5	1.0	-0.1
All Industries	36.1	34.9	35.6	-2.0	-2.2	-2.0

Table 7-10: Industries with the Highest and Lowest 1986 Female Employment Proportions, 1971, 1981, and 1986

	SIC Div.	% Female 1971	1981	1986
Highest Female Proportions				
Kindergartens & nursery schools	10	89.2	95.4	97.0
Women's clothing stores	8	84.5	89.3	89.7
Private households	10	90.7	90.7	87.9
Misc. personal services	10	80.1	77.1	87.8
Related health care institutions & wel	10	78.6	80.5	81.8
Clothing and dry goods stores, n.e.s.	8	70.5	78.1	81.8
Diagnostic & therapeutic services, n.e	10	75.5	80.5	80.4
Women's clothing industries	5	76.7	80.2	80.0
Hospitals	10	77.3	79.2	79.9
Children's clothing industry	5	73.4	80.8	79.7
Barber & beauty shops	10	61.6	73.6	79.7
Misc. clothing industries	5	65.0	76.1	76.3
Schools of art & of the performing art	10	73.2	74.2	75.8
Men's clothing industries	5	68.5	74.9	75.5
Bank & other deposit accepting establi	9	65.6	75.0	75.3
Florists' shops	8	60.2	73.8	74.7
Offices of dentists	10	59.1	69.6	74.5
Offices of para-medical personnel	10	59.7	65.8	74.1
Libraries, museums & other repositorie	10	72.0	73.3	72.6
Misc. health services	10	77.1	80.5	72.5
All Highest Proportion Industries		75.3	78.6	80.0
Lowest Female Proportions				
Stone quarries	4	4.4	7.5	9.5
Concrete products manufacturers	5	7.5	8.9	9.3
Railway transport	7	5.5	7.5	9.3
Highway, bridge & street construction	6	3.4	7.6	9.2
Ready-mix concrete manufacturers	5	6.9	9.4	9.2
Grain elevators	7	8.9	12.0	8.6
Fabricated structural metal industry	5	6.0	7.8	8.6
Pulp & paper mills	5	6.4	8.2	8.3
Logging	2	3.4	7.0	8.3
Shipbuilding & repair	5	4.3	4.8	8.2
Misc. non-metal mines	4	5.0	9.8	8.2
Sawmills, planing mills & shingle mill	5	3.8	7.3	7.6
Coal mines	4	2.2	8.3	7.6
Iron & steel mills	5	5.4	7.0	7.3
Gold mines	4	4.0	6.8	7.1
Iron foundries	5	5.5	7.4	6.9
Miscellaneous metal mines	4	4.0	8.8	6.8
Iron mines	4	4.9	9.0	6.6
Asbestos mines	4	4.7	6.1	6.6
Highway & bridge maintenance	7	3.1	4.4	6.0
All Lowest Proportion Industries		5.2	7.7	8.2

Note: Industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 7-11: Ratios of Industry Net Intercensal Retention Rates to All-Industry Rates, by Age Group, 1971-81 and 1981-86

	Age Group in Later Year										
	All Ages	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Div.1 - Agriculture											
1971-81											
Male	0.77	0.23	0.86	1.15	1.11	1.06	1.05	1.03	1.11	2.13	2.00
Female	0.63	0.45	1.89	1.18	0.74	0.66	0.61	0.60	0.56	0.88	0.96
1981-86											
Male	0.98	0.91	1.00	0.99	1.01	1.03	1.09	1.10	1.40	2.58	1.44
Female	1.08	1.16	1.22	1.04	1.05	1.16	1.24	1.36	1.54	3.14	1.98
Div.2 - Forestry											
1971-81											
Male	0.94	1.09	0.81	0.87	0.85	0.89	0.86	0.86	0.80	0.42	0.44
Female	1.82	2.22	1.59	1.52	1.30	1.28	1.53	1.23	1.05	1.13	0.76
1981-86											
Male	0.98	0.94	0.93	0.97	0.94	0.95	0.96	0.93	0.93	0.58	1.02
Female	1.09	1.02	1.02	1.09	1.14	1.04	1.07	1.01	0.73	1.24	0.00
Div.3 - Fishing & trapping											
1971-81											
Male	1.02	0.90	1.08	1.24	1.19	1.03	1.05	1.02	1.01	0.81	0.96
Female	2.02	2.34	2.89	2.51	1.40	2.12	1.75	1.76	0.97	1.04	0.00
1981-86											
Male	1.05	1.09	1.17	1.03	0.96	0.97	1.09	1.06	1.04	1.12	0.96
Female	1.56	1.73	1.99	1.62	1.24	1.78	1.33	1.33	1.30	0.79	0.00
Div.4 - Mines (inc. milling), quarries & oil wells											
1971-81											
Male	1.11	2.77	0.99	0.97	0.97	0.96	0.91	0.89	0.77	0.32	0.26
Female	1.97	3.97	1.40	1.18	1.30	1.33	1.11	1.11	1.22	0.79	0.28
1981-86											
Male	0.81	0.78	0.81	0.86	0.90	0.91	0.88	0.79	0.61	0.30	0.62
Female	0.81	0.84	0.73	0.76	0.73	0.80	0.91	0.73	0.98	0.55	1.33
Div.5 - Manufacturing industries											
1971-81											
Male	0.98	1.41	0.92	0.95	0.96	0.97	0.97	0.97	0.93	0.52	0.41
Female	0.94	1.04	0.94	0.97	0.95	0.91	0.88	0.86	0.83	0.58	0.44
1981-86											
Male	0.94	0.93	0.95	0.95	0.97	0.96	0.96	0.95	0.88	0.48	0.64
Female	0.91	0.91	0.94	0.93	0.91	0.91	0.87	0.88	0.84	0.62	0.81
Div.6 - Construction industry											
1971-81											
Male	1.05	1.55	1.03	1.06	1.03	0.94	0.90	0.86	0.85	0.74	0.48
Female	1.64	2.45	2.27	1.96	1.58	1.30	1.23	1.32	1.30	1.58	0.92
1981-86											
Male	0.92	0.85	0.88	0.89	0.89	0.88	0.87	0.87	0.88	0.76	0.71
Female	0.93	0.88	1.01	0.93	0.87	0.83	1.00	1.00	0.92	1.24	0.95

Table 7-11: (Continued)

	Age Group in Later Year										
	All Ages	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Div.7 - Transportation, communication & other utilities											
1971-81											
Male	1.03	2.62	1.30	1.13	1.07	1.04	1.03	0.99	0.84	0.39	0.26
Female	1.21	1.80	1.00	1.03	1.07	1.11	1.13	1.11	1.05	0.58	0.56
1981-86											
Male	0.99	1.09	1.09	1.04	1.07	1.07	1.08	0.98	0.81	0.45	0.75
Female	0.97	1.02	0.97	0.94	1.02	1.00	1.01	0.90	0.95	0.66	1.07
Div.8 - Trade											
1971-81											
Male	1.09	0.68	0.87	1.01	1.02	1.03	0.97	1.00	1.00	1.16	0.93
Female	1.13	0.62	1.13	1.51	1.33	1.19	1.10	1.04	1.05	1.13	0.72
1981-86											
Male	1.03	0.92	0.97	0.97	0.98	0.99	0.96	1.01	1.01	1.06	0.85
Female	0.97	0.84	1.00	1.01	0.95	0.96	0.94	0.94	0.90	1.00	0.95
Div.9 - Finance, insurance & real estate											
1971-81											
Male	1.12	4.08	1.33	1.10	1.14	1.16	1.22	1.26	1.31	1.71	1.37
Female	1.29	1.65	0.82	0.97	1.07	1.14	1.19	1.22	1.31	1.33	1.00
1981-86											
Male	1.07	1.40	1.11	1.04	1.07	1.14	1.11	1.14	1.24	1.55	1.13
Female	0.95	0.89	0.89	0.95	0.95	1.00	1.02	1.01	1.08	1.24	1.35
Div.10 - Community, business & personal											
1971-81											
Male	1.23	1.31	1.39	1.18	1.15	1.19	1.20	1.25	1.32	1.48	1.15
Female	1.05	1.22	1.09	0.99	1.05	1.09	1.11	1.12	1.09	0.92	0.64
1981-86											
Male	1.11	1.22	1.10	1.06	1.05	1.07	1.10	1.10	1.22	1.30	1.00
Female	1.06	1.11	1.04	1.04	1.04	1.04	1.05	1.06	1.05	0.93	1.05
Div.11 - Public administration & defence											
1971-81											
Male	0.93	1.59	1.01	1.04	1.00	0.96	0.98	0.96	0.95	0.45	0.48
Female	1.21	1.99	1.12	1.13	1.18	1.15	1.18	1.14	1.03	0.54	0.36
1981-86											
Male	1.00	1.14	1.10	1.07	1.03	1.01	0.98	0.94	0.85	0.52	0.73
Female	1.03	1.08	1.02	1.01	1.04	0.99	1.00	0.96	0.92	0.48	0.77

Note: Net retention rates are defined in the text.

CHAPTER 8: THE SELF-EMPLOYED

The term "self-employed" is used here to refer to all employed persons who, at the census dates, were not classified as "paid workers." Thus the term includes those working for themselves, with or without paid help, but it also includes unpaid family workers who worked for a spouse or other relative in a family farm or business. Of the total number of self-employed thus defined, about one in twelve was an unpaid family worker at the time of the 1981 census. The proportion was much higher among women (one in four), especially married women (three in ten), than among men (three in one hundred). (See Statistics Canada, 92-915, p. 5-1.)

The total number of self-employed actually declined by more than one-tenth between 1971 and 1981, a period in which overall employment grew by more than one-third. Relatively slow growth of self-employment would not have been surprising since overall employment growth was associated mainly with increases in youth and female workers, two groups that historically have had low rates of self-employment. In fact, however, the decline went far beyond that, as Table 8-1 indicates. It was associated with sharp declines in the self-employment rate for every age group (among those 55 and over, for example, the rate fell from 19.4 per cent in 1971 to 14.1 in 1981) and for both sexes (among women, in particular, it fell from 10.3 to 4.4). There was some recovery in the rates between 1981 and 1986, when self-employment grew somewhat more rapidly than total employment. Even so, there were fewer people reported as self-employed in 1986 than in 1971.

Older workers are more likely to be self-employed than young ones – some two to three times more likely, based on Table 8-1 – and men much more likely than women, especially in the two later census years. As can also be seen from the table, men accounted for somewhat more than two-thirds of all self-employment in all three census years – far more than their proportion in total employment.

The industrial distribution of self-employment is shown in Table 8-2. Self-employment accounted for 11.5 per cent of total employment in 1971, 7.4 per cent in 1981, and 7.7 per cent in 1986. Agriculture accounted for more than one-third of all self-employment in 1971, and its progressively smaller share in total employment helps to account for the overall reduction in the number self-employed. Even within agriculture, however, the self-employed declined from 75 per cent in 1971 to 60 per cent in 1986. The general tendency was thus towards less self-employment. Only in construction was there an increase of any note in the proportion self-employed – from 11.9 to 14.0 per cent of the industry's total over the fifteen-year period.

Self-employment in the service industries increased too; it accounted for half of all self-employment in 1986 as compared to only one-third in 1971. Much of this increase was within division 10 (community, business and personal services), which raised its share from 16 to 30 per cent of the self-employed total. However, the increase was associated almost entirely with the general growth in service industry employment, since within services the fraction self-employed changed little. In 1986 fewer than 6 service industry workers in 100 were self-employed – somewhat more in divisions 8 and 10 (trade; community, business and personal services) and less in the others. In the aggregate, self-employment accounted for about 7.7 per cent of all employment in that year, so the proportion in the service industries remained below average.

Figure 8-1 shows age pyramids for the self-employed in the three census years. It emphasizes the general tendency for self-employment to be concentrated among older workers, especially men. The greatest over-representation occurs among males 65 and over; that group figures much more prominently in the self-employment than in employment as a whole. Furthermore, the group's representation increased somewhat over the fifteen years. The over-representation of males in the age groups between 40 and 65 was also greater in 1981 and 1986 than in 1971, and males in their thirties joined the over-represented category in the 1980s. That experience was not shared by women; while men 30 and over became relatively more prominent among the self-employed, women became somewhat less prominent.

Table 8-3 compares the net retention rates for the self-employed with those for all workers. As in the previous chapter, comparisons take the form of ratios of the two rates. The male ratios are generally above 1.00 for both the 1971-81 and 1981-86 periods. Thus for men, self-employment typically grew more rapidly than employment in general within a cohort. The comparison is especially striking for men aged 65 to 69 and 70 and over. However, for women the pattern is quite different. In the earlier period female self-employment grew much less rapidly than female employment as a whole, and that is the case for most age groups. (An exception: the sharp increase among women 35 to 39 in 1981, compared to those 25 to 29 in 1971.) In the later period just the opposite was true: self-employment among women also tended to increase with age in the period 1981-86, as it did for men.

Figure 8-1: Employment Age Pyramids, 1971, 1981, and 1986 -- Self-employed

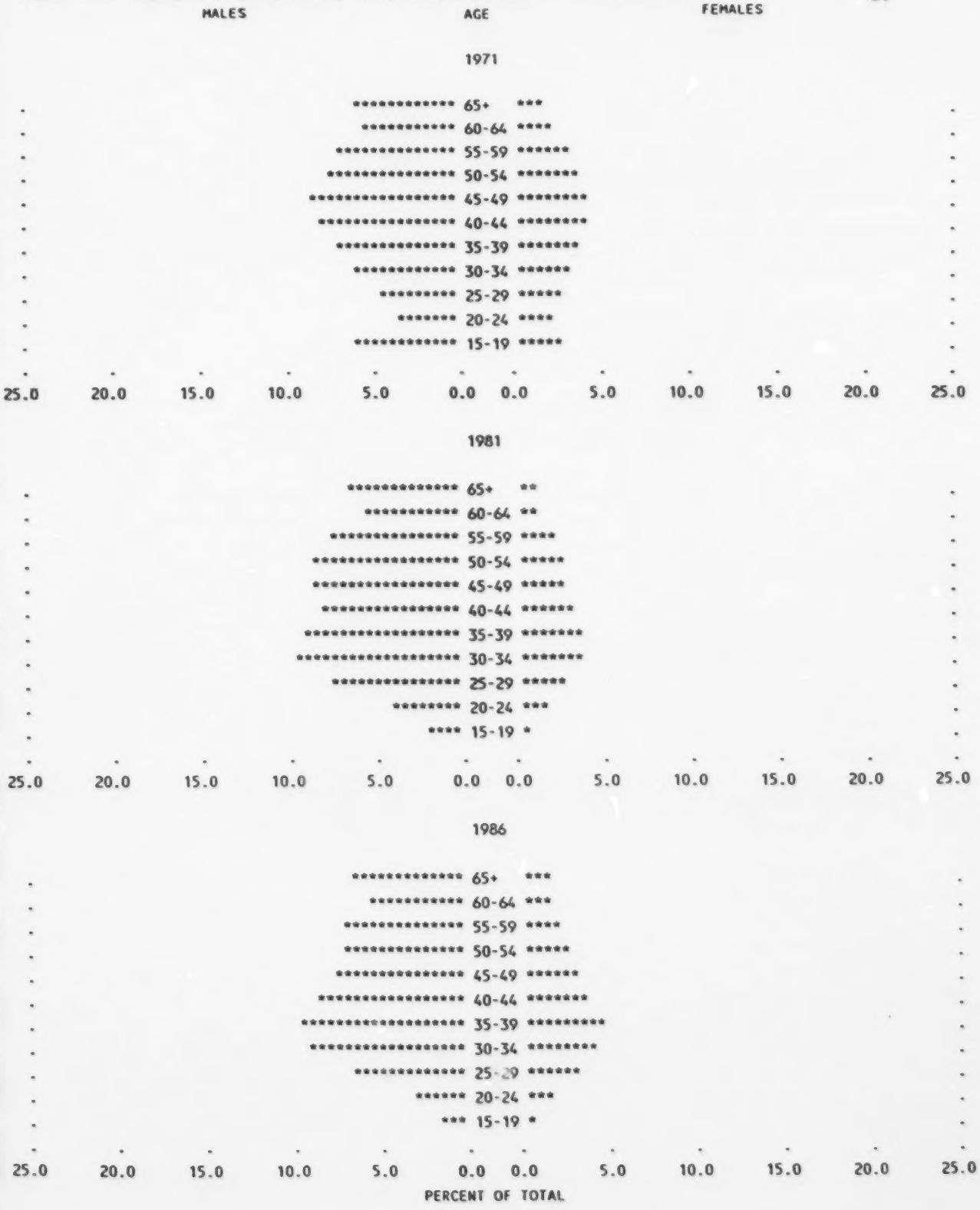


Table 8-1: Age and Sex Composition of Self-Employment, 1971, 1981, and 1986

	<35	35-54	55+	Total	Male	Female
Number ('000s)						
1971	279.5	424.9	228.3	932.6	646.6	285.9
1981	258.1	373.0	189.9	821.1	625.0	196.2
1986	262.2	413.6	212.8	888.6	641.9	246.8
% of Total						
1971	30.0	45.6	24.5	100.0	69.3	30.7
1981	31.4	45.4	23.1	100.0	76.1	23.9
1986	29.5	46.5	23.9	100.0	72.2	27.8
% of Employment in Age or Sex Group						
1971	7.3	13.6	19.4	11.5	12.1	10.3
1981	4.5	9.4	14.1	7.4	9.4	4.4
1986	4.6	9.0	16.0	7.7	9.7	5.0
% Growth (annual average)						
1971-81	-0.8	-1.3	-1.8	-1.3	-0.3	-3.7
1981-86	0.3	2.1	2.3	1.6	0.5	4.7
1971-86	-0.4	-0.2	-0.5	-0.3	0.0	-1.0

Table 8-2: Self-Employment, 1971, 1981, and 1986 -- Industry Divisions

Industry	% of Industry Employment			% of All Self-Employment			% Growth Rate		
	1971	1981	1986	1971	1981	1986	71-81	81-86	71-86
Primary Industries	54.1	40.9	41.1	39.9	38.0	34.6	-1.8	-0.3	-1.3
1 - Agriculture	74.6	63.0	59.9	37.7	35.1	31.9	-2.0	-0.3	-1.4
2 - Forestry	8.3	7.5	7.4	0.6	0.7	0.7	1.2	-0.1	0.8
3 - Fishing & trapping	58.0	49.6	48.6	1.5	1.9	1.9	1.3	1.8	1.5
4 - Mines (inc. milling), quarries & oil wells	1.0	0.9	0.7	0.1	0.2	0.1	2.7	-7.5	-0.8
Manufacturing and Construction Industries	4.0	4.2	4.7	8.9	14.0	13.5	3.3	0.9	2.5
5 - Manufacturing industries	1.6	1.6	1.7	2.8	4.0	3.8	2.4	0.8	1.9
6 - Construction industry	11.9	12.4	14.0	6.2	10.0	9.7	3.6	0.9	2.7
Service Industries	6.5	5.2	5.6	32.9	45.7	49.7	2.0	3.3	2.5
7 - Transportation, communication & other utilities	4.1	3.8	4.0	2.8	4.1	4.0	2.6	1.0	2.1
8 - Trade	10.3	6.9	6.6	13.2	15.3	14.3	0.2	0.2	0.2
9 - Finance, insurance & real estate	2.5	1.6	2.1	0.9	1.2	1.5	0.8	6.9	2.8
10 - Community, business & personal	7.7	6.6	7.4	16.0	25.2	30.0	3.3	5.2	4.0
11 - Public administration & defence	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unspecified or undefined	27.4	5.7	5.6	18.3	2.3	2.1	-19.6	-0.1	-13.7
All Industries	11.5	7.4	7.7	100.0	100.0	100.0	-1.3	1.6	-0.3

Table 8-3: Ratios of Self-Employed Intercensal Net Retention Rates to All-Industry Rates, by Age Group, 1971-81 and 1981-86

	Age Group in Later Year										
	All Ages	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
1971-81											
Male	0.77	0.45	2.01	1.57	1.20	1.04	0.97	0.91	0.95	1.71	1.59
Female	0.43	0.42	1.56	0.82	0.53	0.51	0.50	0.47	0.47	0.83	0.76
1981-86											
Male	1.02	1.69	1.32	1.13	1.07	1.06	1.03	1.07	1.30	2.36	1.36
Female	1.13	2.49	1.61	1.15	1.05	1.15	1.13	1.22	1.30	2.52	1.65

Note: Net retention rates are defined in the text.

CHAPTER 9: A TAXONOMY OF INDUSTRIAL CHARACTERISTICS

To this point we have been concerned mostly with industries at rather high levels of aggregation. Our aim now is to summarize the major features of industries at a more detailed level. We work at the most disaggregated level possible with the census tabulations and pay particular attention to the demographic characteristics of industries defined at that level, and the ways in which those characteristics changed during the period 1971-86.

There are 264 industries identified at the most disaggregated level. In order to summarize that much detail we have applied some simple taxonomic procedures. The characteristics considered are employment growth, the male/female composition of employment, and age distribution.

The employment growth of an industry is classified as VR (very rapid), R (rapid), A (average), S (slow), or VS (very slow). The classification is based on the industry's growth rate relative to the average. The industries are first ranked from fastest to slowest. The middle 40 per cent are classified as A, the top and bottom 10 per cent as VR and VS, and the remaining 20 per cent on each side as R or S. The procedure is similar for the male/female classification: industries with the most extreme sex proportions are classified as M+ (heavily male) or F+ (heavily female); those with less extreme distributions are classified as M (male) or F (female). (The proportions in each category correspond with those of the growth classification; as before the middle 40 per cent are classified as A, for average.) Finally, the age distribution coding reflects the relative concentration in each of three age groups: under 35, 35 to 54, and 55 and over. The codes run from 1 (light representation) to 5 (heavy representation). Thus, for example, a "333" industry has an average age distribution whereas a "135" industry has relatively light representation in the youngest group, average representation in the middle one, and heavy representation in the oldest one. (As before, the 40-20-10 per cent criteria are used to define the categories.)

The taxonomic indicators for all industries are reported in Table 9-1. Growth indicators are provided for both 1971-81 and 1981-86. The indicators of sex proportion and age distribution are provided for each of the three census years. (The actual values that separate the categories in each case are reported in Table 9-2.) Table 9-1 shows also how the industry divisions and subdivisions fit into the classification schemes. (It should be noted that the divisions and subdivisions were not used in developing the classification schemes; only the 264 individual industries were used.)

For a "typical industry" (the first row of Table 9-1) the indicators are necessarily all "average." (All comparisons are relative to a given census year or intercensal period.) Total employment gets an A for average with respect to both its relative rate of growth and its sex proportion, and three triple 3's with respect to its age distribution.

A study of the taxonomy as it relates to the industry divisions and subdivisions confirms earlier impressions about the broad industry groups, and provides some additional information. First, at this level of aggregation there are relatively few outliers: the A's and 3's predominate. Second, there is an appearance of considerable stability in the rankings, with rather few changes from one period or census year to another. For example, of the fifty-five subdivisions, thirty are in the same relative growth category in each of the two periods. With regard to male/female distribution, only seventeen of the fifty-five changed

categories between 1971 and 1981, and only six between 1981 and 1986. Furthermore, there is no case of a change involving a move to other than an immediately adjacent male/female category. With regard to age distribution, in the period 1971-81, thirteen of the fifty-five subdivisions show no change in our three-digit code, and nineteen show a change in only one digit; in the 1981-86 period twenty-one industries show no change and another twenty-two show a change in only one digit. There are very few changes other than to adjacent categories (i.e., changes of more than one in any digit).

One aspect of the stability is the maintenance of relatively high male employment proportions in some industries – logging, fishing, mining, wood industries, primary metals, and construction are notable – and of relatively high female proportions in others – leather industries, knitting mills, clothing, finance, insurance and real estate, and personal service industries are good examples. The relative stability of the sex proportions is of particular interest, considering the rapid movement of women into employment over the fifteen-year period. The relative stability of the age rankings is of interest too, considering the major changes that have occurred in the overall age distribution of the labour force.

At the levels of industry subdivisions there thus appears to be considerable continuity in age and sex proportions, and relatively few outliers. What lies behind this? That is, what is observed at the detailed Standard Industrial Classification (SIC) code level, as recorded in Table 9-1? Much greater diversity at this level could, in principle, average out, when considered at a more aggregated level. However, even at the most detailed level we find relatively few outliers and a high degree of continuity. Only 13 per cent of the detailed industries show either a 5 or a 1 in the same age category in all three census years. In a similar vein, only 5 per cent of the industries show very high male employment concentrations (as represented by M+) in all three years, and only 8 per cent show very high female concentrations (F+). With respect to continuity, industries tend to remain male or female dominated from one census to the next, or to change only to an adjacent category. Similarly, industries with concentrations of older or younger workers in one census year tend to have similar concentrations in the next.

At the same time, it is clear that there is a much greater industrial concentration of female than of male employment. The industries with very high male concentrations accounted for only 2.4 per cent of all employment in 1986, whereas those with very high female concentrations accounted for 15.5 per cent.

As a further summary of the tendencies of industries to stay within each category in the taxonomy we present Tables 9-3 through 9-7. These tables compare the categories in the first and last periods, based on the 236 industries that had at least 2,500 workers in all three census years.

Table 9-3 relates to growth rates in the period 1971-81 and 1981-86. Among the variables considered in the taxonomy, growth rate shows the least stability. Only slightly more than half (fifty-two of ninety-nine) of the industries that experienced average growth (A) in 1971-81 were in the same category in 1981-86, only one-quarter of the very-slow-growth (VS) industries were in the same category, and so on. Indeed, the only cell that is empty involves the transition from very slow growth in the earlier period to very rapid growth in the later one. Thus industries do not have a strong tendency to maintain their relative rates of growth over time.

In contrast, the stability in the sex proportion categories from one census year to another stands out clearly in Table 9-4. We see, for example, that twenty-two of the twenty-five industries classified as F+ in 1971 were still classified as F+ in 1986, while of the twenty-two industries classified as M+ in 1971, fourteen were still classified as M+ in 1986.

Tables 9-5 to 9-7 present information about transitions among age categories. The tendency for high concentrations in 1971 to be maintained in 1986 is weaker for age than for sex, but still quite strong. On average, for each of the three age groups, about half the industries with an extreme age distribution (a 1 or a 5) in 1971 were in the same category in 1986.

The general impression from the taxonomy, and also from the earlier discussion, is that most industries are characterized by considerable stability in the age composition of their employment, and greater stability in sex composition. The stability is *relative*, of course: the age structures of most industries have evolved in such a way as to preserve their relationship to the age structure of overall employment. Thus industries that had relatively old age structures in 1971 were likely still to have had them in 1986. But in the course of maintaining their relative age structures they accommodated the influx of the baby boom. Similarly, industries that had mostly female workers in 1971 typically had mostly female workers in 1986. Even so, industries collectively absorbed the 77 per cent increase in female employment between 1971 and 1986 in such a way that not only the level but also the proportion of female employment in almost all industries increased. Clearly, then, major adjustments in the age-sex structure of employment have occurred within industries, and one might anticipate that such adjustments will continue.

But are there adjustment "problems" that one can foresee? The concentration of female workers in some industries and males in others is a problem inasmuch as such concentrations reflect social attitudes and practices that tend to preclude women from working in certain industries and men from working in others. That is a problem not only from the point of view of individuals who would like to be eligible for more highly paid jobs. It is a problem also from the point of view of society: if some workers are not able to work at jobs for which they are potentially qualified there is a sacrifice of national product; the economy as a whole will produce less than it could produce. Our analysis clearly confirms the heavy and increasing concentration of women in the service industries – four out of every five women in 1986, compared to one out of every three men – and the heavy though decreasing concentration of men in the primary industries and in manufacturing and construction. It shows also the strong tendency for industries considered at a disaggregated level to retain their male/female employment ratios over extended periods of time. The "gender-typing" of industries is, of course, well known and has attracted a great deal of attention; we have simply documented it on the basis of the census tabulations that have been available to us.

What about possible adjustment problems associated with the age composition of employment? We have observed that certain industries have heavy concentrations of older workers (e.g., farms, shipbuilding and repair, security and investigation services). An old age distribution combined with economic decline in an industry could suggest problems, inasmuch as older workers are generally less able and less willing to change jobs than are younger ones. There are, of course, many factors, including a greater reluctance to move geographically and the possible loss of non-portable and non-vested pension benefits.

However, the availability of alternative employment is a major consideration. The opportunities of older workers in a given industry depend very much on whether or not they live in a large population centre, on the state of the local economy, and so on. In this analysis we have considered industries only from the national perspective. But most industries are not evenly distributed across the country. Some are concentrated entirely in one location, or in only a few. Some are located in isolated areas where they are the sole employers while still others, including some large ones, are located mostly in major urban centres where they account for only a small portion of local employment. Thus a careful identification of industries in which the age structure is suggestive of significant adjustment problems requires much more detailed information than it has been possible to take account of in this study.

Nor should we conclude that only those industries with older work forces are serious candidates for adjustment problems. Industries with a heavy reliance on young workers may experience difficulties also. Banks, food stores, gasoline service stations and shoe stores are among the industries that employ large numbers of young workers. Often the jobs are of an entry-level variety, so the workers move to other industries as they gain experience and maturity. However, the industries themselves will have to adjust to the smaller numbers of young workers that are likely in the future – and also to the possibility that those who are available may be able to command higher wages than the industries are accustomed to paying. That suggests the need to make adjustments that will economize on the use of labour, especially youthful labour.

Another possible adjustment problem facing industries – and again one that cannot be explored in detail with the census data that we are using – stems from the current concentration of workers in their middle years. By middle age those following a career path would expect to have been promoted to positions of greater responsibility and, of course, higher incomes. Yet their numbers alone hamper their prospects for promotion. Denton and Spencer (1987), building on earlier work of Keyfitz (1973), projected that the age of promotion to a "middle rank" position in Canada would increase by 2.2 years between 1976 and 1991 and a further 2.9 years by 2001, and that the age of reaching "highest rank" would rise by almost 4.5 years between 1991 and 2021. A number of schemes have been suggested to maintain worker morale in such circumstances, including systematic use of lateral moves within organizations when few vertical moves are possible. (See, for example, Foot and Venne, 1990.)

Table 9-1: Taxonomy of Industry Characteristics Relative to the Characteristics of the Overall Work Force, 1971, 1981, and 1986

SIC Code (1970)		% of Total Employment 1986	Growth		Male/Female Proportion			Age Distribution		
			71-81	81-86	1971	1981	1986	1971	1981	1986
	Typical industry	--	A	A	A	A	A	333	333	333
	Div.1 - Agriculture	4.09	S	A	A	A	A	235	135	225
1-19	Farms	3.93	VS	A	A	A	A	235	135	125
21	Services incidental to agriculture	0.17	R	A	A	F	F	423	512	512
	Div.2 - Forestry	0.68	A	A	M+	M	M	432	432	432
31	Logging	0.45	S	S	M+	M+	M+	332	332	333
39	Forestry services	0.23	R	VR	A	A	A	513	512	511
	Div.3 - Fishing & trapping	0.31	A	A	M+	M+	M	334	333	333
41	Fishing	0.27	A	R	M+	M+	M	334	333	333
45	Fishery services	0.03	VR	A	A	A	A	234	333	431
47	Hunting & trapping	0.01	S	S	M	A	A	234	135	135
	Div.4 - Mines (inc. milling), quarries & oil wells	1.39	A	S	M	M	M	332	432	342
	Metal mines	0.39	S	VS	M+	M+	M+	432	332	252
51	Gold mines	0.08	S	VR	M+	M+	M+	235	324	333
57	Uranium mines	0.04	VR	VS	M+	M	M+	342	421	431
58	Iron mines	0.06	A	VS	M+	M	M+	441	341	152
59	Miscellaneous metal mines	0.20	S	VS	M+	M+	M+	432	343	153
	Mineral fuels	0.55	VR	A	A	A	A	341	521	431
61	Coal mines	0.11	A	A	M+	M+	M+	253	332	352
64	Crude petroleum & natural gas industry	0.45	VR	A	A	A	A	441	521	431
	Non-metal mines (exc. coal mines)	0.11	S	S	M+	M+	M+	343	333	253
71	Asbestos mines	0.03	VS	VS	M+	M+	M+	253	154	154
72	Peat extraction	0.01	S	A	M	M	M	324	422	422
73	Gypsum mines	0.01	S	A	M+	M+	M+	134	115	235
79	Misc. non-metal mines	0.07	A	A	M+	M	M+	432	432	342
	Quarries and sand pits	0.09	A	R	M+	M	M	243	243	234
83	Stone quarries	0.03	S	R	M+	M+	M+	243	243	235
87	Sand pits or quarries	0.05	A	A	M+	M	M	243	253	234
	Services incidental to mining	0.25	VR	S	M	M	M	521	511	511
96	Contract drilling for petroleum	0.08	VR	S	M	M	M	521	511	511
98	Other contract drilling	0.02	VS	S	M+	M	M+	422	431	431
99	Misc. services incidental to mining	0.15	VR	S	M	M	M	422	514	521
	Div.5 - Manufacturing industries	16.89	A	A	A	A	A	333	333	333
	Food & beverage industries	2.29	A	A	A	A	A	333	333	333
101	Meat & poultry product industries	0.39	A	A	A	A	A	333	333	433
102	Fish product industries	0.38	R	A	A	A	F	423	422	422
103	Fruit & vegetable processing industries	0.13	S	A	F	A	A	333	234	334
104	Dairy products industry	0.23	VS	A	A	A	A	333	333	333
105	Flour & breakfast cereal products industry	0.05	VS	A	A	A	A	244	234	234
106	Feed industry	0.10	A	A	A	M	A	333	423	423
107	Bakery products industries	0.38	S	A	A	A	A	333	333	323
108	Misc. food industries	0.34	A	R	A	A	A	333	343	244
109	Beverage industries	0.29	S	A	M	M	M	333	333	333

Table 9-1: (Continued)

	Tobacco products industries	0.06	VS	S	F	A	A	343	154	153
151	Leaf tobacco processors	0.01	VS	VR	A	A	A	145	154	243
153	Tobacco products manufacturers	0.05	VS	S	F	A	A	343	154	153
	Rubber & plastics products industries	0.61	A	A	A	A	A	432	432	432
162	Rubber products industries	0.22	A	A	A	A	M	332	332	332
165	Plastics fabricating industry, n.e.s.	0.39	R	R	A	A	A	421	431	422
	Leather industries	0.20	S	S	F	F	F	423	333	333
172	Leather tanneries	0.02	VS	VS	A	A	A	234	234	235
174	Shoe factories	0.14	S	S	F	F	F	423	423	333
175	Leather glove factories	0.01	VS	S	F+	F	F	333	333	233
179	Luggage handbag & small leather goods mfrs.	0.04	A	VS	F	F	F	323	333	343
	Textile industries	0.55	S	S	F	A	A	333	333	333
181	Cotton yarn & cloth mills	0.05	VS	VS	A	A	A	333	333	333
182	Wool yarn & cloth mills	0.03	VS	VS	F	A	A	333	334	253
183	Man-made fibre, yarn & cloth mills	0.10	S	VS	A	A	A	333	333	333
184	Cordage and twine industry	0.01	A	A	A	A	A	253	512	511
185	Felt & fibre processing mills	0.01	S	S	A	A	A	224	233	324
186	Carpet, mat & rug industry	0.05	A	S	A	A	A	512	332	342
187	Canvas products, & cotton & jute bags ind.	0.03	A	A	F	F	F	234	333	324
188	Auto fabric accessories industries	0.06	R	VR	F	F	F	351	252	342
189	Miscellaneous textile industries	0.20	A	A	F	F	F	333	333	333
	Knitting mills	0.13	S	S	F+	F	F	423	343	333
231	Hosiery mills	0.04	S	S	F+	F+	F+	522	432	332
239	Knitting mills (except hosiery mills)	0.09	A	S	F+	F	F	323	243	243
	Clothing industries	0.92	A	A	F+	F+	F+	333	243	343
243	Men's clothing industries	0.28	A	S	F+	F+	F+	423	333	333
244	Women's clothing industries	0.35	A	A	F+	F+	F+	333	253	243
245	Children's clothing industry	0.06	A	A	F+	F+	F+	333	243	343
246	Fur goods industry	0.03	A	R	A	A	A	155	145	325
248	Foundation garment industry	0.02	S	S	F+	F+	F+	432	422	332
249	Misc. clothing industries	0.17	VR	VR	F+	F+	F+	324	342	342
	Wood industries	1.05	A	A	M	M	M	333	423	423
251	Sawmills, planing mills & shingle mills	0.59	A	S	M+	M+	M+	323	423	333
252	Veneer & plywood mills	0.08	S	S	A	M	A	432	333	334
254	Sash, door & other millwork plants	0.26	VR	A	M	M	M	333	522	512
256	Wooden box factories	0.03	A	S	A	M	M	324	422	513
258	Coffin & casket industry	0.01	VS	R	A	A	M	235	325	314
259	Misc. wood industries	0.09	A	A	M	M	M	333	423	423
	Furniture & fixture industries	0.59	A	A	A	A	A	333	333	333
261	Household furniture manufacturers	0.37	R	A	A	A	A	333	333	423
264	Office furniture manufacturers	0.08	R	R	A	A	A	333	332	422
266	Misc. furniture & fixture manufacturers	0.12	A	R	A	A	A	333	333	333
268	Electric lamp & shade manufacturers	0.02	A	R	F	F	F	423	253	333
	Paper & allied industries	1.07	A	S	A	M	M	343	243	244
271	Pulp & paper mills	0.73	A	S	M	M+	M+	243	244	244
272	Asphalt roofing manufacturers	0.01	R	VS	M	M	M+	431	423	512
273	Paper box & bag manufacturers	0.19	S	S	A	A	A	432	343	333
274	Misc. paper converters	0.14	A	A	A	A	A	332	343	333
	Printing, publishing & allied industries	1.22	A	A	A	A	A	423	333	333
286	Commercial printing	0.60	A	A	A	A	A	333	332	333
287	Platemaking, typesetting & trade bindery ind.	0.12	A	VR	A	A	A	333	333	432
288	Publishing only	0.16	R	VR	F	F	F	423	432	432
289	Publishing and printing	0.34	S	A	A	A	F	513	333	333
	Primary metal industries	0.98	S	S	M	M+	M+	243	333	254
291	Iron & steel mills	0.46	A	S	M+	M+	M+	343	333	153

Table 9-1: (Continued)

292	Steel pipe & tube mills	0.06	A	A	M	M+	M	351	333	243
294	Iron foundries	0.07	VS	A	M+	M+	M+	244	234	234
295	Smelting & refining	0.31	S	A	M	M	M	243	244	253
297	Copper & copper alloy rolling, casting & extruding	0.02	VS	S	M	M	M	254	135	235
298	Metal rolling, casting & extruding, n.e.c.	0.05	A	A	A	M	M	343	334	333
	Metal fabricating industries (ex. mlt eq.ind.)	1.32	A	S	A	M	M	333	333	333
301	Boiler & plate works	0.06	R	S	M	M+	M	243	243	244
302	Fabricated structural metal industry	0.10	A	VS	M	M+	M+	343	343	243
303	Ornametal & architectural metal industry	0.13	A	S	A	M	M	432	333	432
304	Metal stamping, pressing & coating industry	0.26	A	S	A	A	M	332	333	333
305	Wire & wire product manufacturers	0.12	A	S	A	A	A	343	343	333
306	Hardware, tool & cutlery manufacturers	0.21	R	A	A	A	A	332	333	333
307	Heating equipment manufacturers	0.04	S	A	A	A	A	333	333	332
308	Machine shops	0.22	A	A	M	M	M	333	333	333
309	Misc. metal fabricating industries	0.17	A	S	A	A	A	343	343	333
	Machinery industries (ex. electrical machinery)	0.87	A	S	A	M	A	332	333	333
311	Agricultural implement industry	0.08	A	VS	M	M	M	254	334	243
315	Misc. machinery & equipment mfrs.	0.53	R	S	A	M	M	343	243	343
316	Commercial refrigeration & air cond. eq. mfrs.	0.04	A	A	M	M	M	332	423	334
318	Office & store machinery manufacturers	0.22	A	R	A	A	A	511	521	531
	Transportation equipment industries	1.77	A	A	M	M	M	343	253	243
321	Aircraft & aircraft parts manufacturers	0.30	A	A	M	M	M	154	234	334
323 &5	Motor vehicles, parts & accessories	1.12	A	R	M	M	M	342	252	243
324	Truck body & trailer manufacturers	0.12	A	S	M	M	M	522	422	432
326	Railroad rolling stock industry	0.07	A	VS	M+	M+	M	144	244	144
327	Shipbuilding & repair	0.09	A	VS	M+	M+	M+	145	244	145
328	Boatbuilding & repair	0.05	A	S	M	M	M	423	422	423
329	Misc. vehicle manufacturers	0.02	VS	S	M	M	M	511	421	342
	Electrical products industries	1.05	S	A	A	A	A	342	343	343
331	Mfrs. of small electrical appliances	0.04	S	VS	A	A	A	343	244	334
332	Mfrs. of major appliances	0.09	S	A	A	A	A	333	244	244
333	Mfrs. of lighting fixtures	0.03	S	S	F	A	A	342	234	333
334	Mfrs. of household radio & tv receivers	0.03	VS	A	F	F	F	521	252	342
335	Communications equipment manufacturers	0.49	S	R	A	A	A	341	342	332
336	Mfrs. of electrical industrial equipment	0.17	A	S	A	A	A	243	244	244
338	Mfrs. of electrical wire & cable	0.08	A	R	A	A	A	253	244	244
339	Mfrs. of misc. electrical products	0.12	A	A	F	A	A	432	343	243
	Non-metallic mineral products industries	0.47	A	S	M	M	M	343	243	244
351	Clay products manufacturers	0.04	A	VS	A	A	A	243	234	234
352	Cement manufacturers	0.04	S	A	M	M+	M	253	253	155
353	Stone products manufacturers	0.01	A	VS	M	M	M	244	324	324
354	Concrete products manufacturers	0.08	S	S	M	M	M+	342	343	334
355	Ready-mix concrete manufacturers	0.09	R	A	M	M	M+	252	253	244
356	Glass & glass products manufacturers	0.12	S	A	A	A	A	432	343	334
357	Abrasives manufacturers	0.02	S	VS	M	M	A	154	235	145
358	Lime manufacturers	0.01	R	VS	M+	M+	M+	234	325	243
359	Misc. non-metallic mineral products ind.	0.08	A	S	M	M	M	342	343	333
	Petroleum & coal products industries	0.20	A	A	A	M	A	253	343	352
365	Petroleum refineries	0.19	A	A	A	M	A	253	343	352
369	Misc. petroleum & coal products ind	0.01	R	VS	M+	M	M	234	242	243
	Chemical & chemical products industries	0.82	A	A	A	A	A	343	333	343
372	Manufacturers of mixed fertilizers	0.02	VS	A	M	M	M	422	423	332
373	Mfrs. of plastics & synthetic resins	0.06	A	A	A	M	A	351	333	333
374	Mfrs. of pharmaceuticals & medicines	0.14	A	A	F	F	F	333	243	343
375	Paint & varnish manufacturers	0.06	S	A	A	A	A	333	234	334

Table 9-1: (Continued)

376	Mfrs. of soap & cleaning compounds	0.06	S	R	A	A	A	333	432	333
377	Mfrs. of toilet preparations	0.07	A	R	F	F	F	332	333	332
378	Mfrs. of industrial chemicals	0.23	A	S	M	M	M	243	343	253
379	Misc. chemical industries	0.17	A	A	A	A	A	333	333	333
	Misc. manufacturing industries	0.74	A	A	A	A	A	333	333	333
391	Scientific & professional equipment ind.	0.26	A	A	A	A	A	432	332	333
392	Jewellery & silverware industry	0.07	A	A	F	F	F	333	333	334
393	Sporting goods & toy industries	0.10	A	A	F	F	F	422	432	432
397	Signs & displays industry	0.08	A	R	A	A	A	333	333	423
399	Misc manufacturing industries, n.e.s.	0.24	A	R	F	A	A	333	334	333
	Div.6 - Construction industry	5.33	A	A	M+	M	M	343	342	333
	General contractors	2.01	S	S	M+	M	M	343	343	333
404	Building construction	1.36	A	A	M	M	M	243	343	333
406	Highway, bridge & street construction	0.37	S	S	M+	M+	M+	343	253	243
409	Other construction	0.28	S	VS	M+	M	M	342	342	242
	Special-trade contractors	3.33	R	A	M+	M	M	332	342	333
421	Special-trade contractors	3.33	R	A	M+	M	M	332	342	333
	Div.7 - Transportation, communication & other util.	7.72	A	A	A	A	A	243	343	243
	Transportation	4.51	A	A	M	M	A	253	243	243
501	Air transport	0.45	R	A	A	A	A	431	431	351
502	Services incidental to air transport	0.11	R	VR	M	M	A	342	343	243
503	Railway transport	0.76	S	S	M	M+	M+	154	234	234
504	Water transport	0.15	S	S	M	M	M	244	154	145
505	Services incidental to water transport	0.12	VS	R	M	M	M	154	155	155
506	Moving & storage, used goods, uncrated	0.10	S	A	M	A	M	332	522	521
507	Other truck transport	1.20	A	A	M	M	M	342	352	343
508	Bus transport, interurban & rural	0.05	VS	S	A	A	A	254	243	154
509	Urban transit systems	0.32	R	A	M	M+	M	154	153	153
512	Taxicab operations	0.25	S	A	M	M	M	254	154	154
515	Pipeline transport	0.06	A	A	M	A	A	441	333	342
516	Highway & bridge maintenance	0.32	S	VR	M+	M+	M+	145	155	155
517	Misc. services incidental to transport	0.32	VR	R	F	F	F	423	422	423
519	Other transportation	0.30	VR	R	A	A	A	154	154	244
	Storage	0.13	A	VS	A	A	M	334	423	423
524	Grain elevators	0.05	S	VS	M	M	M+	234	324	333
527	Other storage & warehousing	0.08	R	S	A	A	A	323	413	422
	Communication	1.99	A	A	F	A	A	432	432	342
543	Radio & tv broadcasting	0.42	R	R	A	A	A	521	421	432
544	Telephone systems	0.91	A	A	F	F	F	521	431	341
545	Telegraph & cable systems	0.03	S	VS	A	A	A	333	253	153
548	Post Office	0.63	A	A	A	A	A	154	234	254
	Electric power, gas & water utilities	1.09	A	A	A	M	M	343	343	243
572	Electric power	0.75	A	A	A	A	M	343	343	253
574	Gas distribution	0.13	A	A	A	A	A	343	343	333
576	Water systems	0.08	A	A	M	M+	M	154	145	245
579	Other utilities	0.13	R	R	M+	M+	M	343	343	333
	Div.8 - Trade	16.50	A	A	A	A	A	333	423	423
	Wholesale trade	4.53	R	A	A	A	A	333	333	333
602	Farm products	0.11	S	VR	A	A	A	234	334	324
606	Coal & coke	0.00	VS	A	A	M	M	144	145	215
608	Petroleum products	0.20	S	S	A	A	A	342	253	253
611	Paper & paper product	0.12	A	R	A	A	A	333	423	423

Table 9-1: (Continued)

612	General merchandise	0.02	R	VS	A	A	A	333	334	324
614	Food	0.52	A	A	A	A	A	333	333	433
615	Tobacco products	0.03	VS	A	A	A	A	324	424	324
616	Drugs & toilet preparations	0.10	S	R	F	F	F	333	333	333
617	Apparel & dry goods	0.14	A	A	F	F	F	234	234	334
618	Household furniture & furnishings	0.08	A	A	A	A	A	333	333	334
619	Motor vehicles & accessories	0.47	A	R	A	A	A	423	432	422
621	Electrical machinery, equipment & supplies	0.41	VR	R	A	A	A	432	422	422
622	Farm machinery & equipment	0.17	R	S	M	M	M	234	333	333
623	Machinery & equipment, n.e.s.	0.82	R	A	A	A	A	432	432	333
624	Hardware, plumbing & heating equipment	0.19	A	A	A	A	A	333	333	333
625	Metal and metal products, n.e.s.	0.11	A	A	A	A	A	432	432	333
626	Lumber & building materials	0.46	R	S	A	A	A	333	423	423
627	Scrap & waste materials	0.10	R	A	M	M	M	244	333	334
629	Wholesalers, n.e.s.	0.49	R	S	A	A	A	333	333	333
	Retail trade	11.97	A	A	F	F	F	323	423	423
631	Food stores	2.54	A	R	F	F	F	522	521	511
642	General merchandise stores	2.09	A	S	F+	F+	F+	333	334	424
652	Tire, battery & accessories stores	0.25	R	S	A	A	A	511	511	511
654	Gasoline service stations	0.65	S	A	M	A	A	512	511	511
656	Motor vehicle dealers	0.84	A	A	M	M	M	333	333	432
658	Motor vehicle repair shops	0.87	R	A	M+	M	M	422	421	422
663	Shoe stores	0.18	A	R	F	F	F	513	512	512
665	Men's clothing stores	0.17	A	A	A	A	A	325	324	414
667	Women's clothing stores	0.44	R	R	F+	F+	F+	145	235	324
669	Clothing and dry goods stores, n.e.s.	0.36	R	R	F+	F+	F+	235	324	413
673	Hardware stores	0.30	A	R	A	A	A	234	324	423
676	Household furniture & appliance stores	0.65	R	R	A	A	A	333	333	423
678	Radio tv & electrical appliance repair shops	0.12	S	R	M	M	M	243	244	244
681	Drug stores	0.56	A	R	F+	F+	F+	423	413	512
691	Book & stationery stores	0.15	R	R	F	F	F+	323	413	423
692	Florists' shops	0.14	R	R	F+	F+	F+	334	423	423
694	Jewellery stores	0.18	R	A	F	F+	F	245	235	325
695	Watch & jewellery repair shops	0.02	A	VR	A	A	A	145	125	235
696	Liquor, wine & beer stores	0.17	A	A	M	A	A	155	324	333
697	Tobacconists	0.04	R	S	F	F+	F	234	324	424
699	Retail stores, n.e.s.	1.24	VR	R	F	F	F	324	423	423
	Div.9 - Finance, insurance & real estate	5.47	R	A	F	F	F	423	423	333
	Finance industries	2.72	R	A	F	F+	F+	512	511	421
701	Bank & other deposit accepting establishments	2.19	R	A	F+	F+	F+	511	511	521
703	Other credit agencies	0.11	S	VS	F	F	F	511	511	421
705	Security brokers & dealers (incl. exchanges)	0.23	A	R	A	A	A	324	324	423
707	Investment & holding companies	0.19	S	A	A	F	F	334	334	235
	Insurance carriers	0.93	A	A	F	F	F	512	422	432
721	Insurance carriers	0.93	A	A	F	F	F	512	422	432
	Insurance agencies & real estate industry	1.82	R	A	F	F	F	245	144	145
735	Insurance & real estate agencies	1.21	R	R	F	F	F	244	244	144
737	Real estate operators	0.62	VR	A	A	A	A	145	145	135
	Div.10 - Community, business & personal service industries	31.10	R	R	F	F	F	423	333	333
	Education & related services	6.69	A	A	F	F	F	423	253	153
801	Kindergartens & nursery schools	0.05	A	S	F+	F+	F+	343	432	341
802	Elementary & secondary schools	4.46	A	A	F	F	F	423	153	153
803	Schools of art & of the performing arts	0.08	A	S	F+	F+	F+	315	235	324

Table 9-1: (Continued)

804	Vocational centers, trade schools & business colleges	0.07	A	S	F	F	F	333	243	252
805	Post-secondary non-university educational institutions	0.53	R	R	F	F	F	422	253	153
806	Universities & colleges	1.19	A	A	F	F	F	422	243	243
807	Libraries, museums & other repositories	0.27	R	R	F+	F+	F+	414	424	423
809	Education & related services, n.e.s.	0.05	A	VR	F	F	F+	512	422	333
	Health & welfare services	8.13	R	R	F+	F+	F+	423	333	343
821	Hospitals	4.13	A	A	F+	F+	F+	423	332	342
822	Related health care institutions & welfare organizations	2.31	VR	R	F+	F+	F+	234	333	333
823	Offices of physicians and surgeons	0.67	A	R	F	F	F	254	154	155
824	Offices of para-medical personnel	0.23	R	VR	F+	F	F+	145	244	244
825	Offices of dentists	0.36	VR	R	F	F+	F+	423	512	522
826	Diagnostic & therapeutic services, n.e.s.	0.37	VR	VR	F+	F+	F+	512	432	342
827	Misc. health services	0.06	R	VS	F+	F+	F+	333	234	342
	Religious organizations	0.56	A	A	F	F	F	135	145	135
831	Religious organizations	0.56	A	A	F	F	F	135	145	135
	Amusement & recreation services	1.14	R	R	A	A	A	414	513	512
841	Motion picture theatres	0.07	S	S	F	F	F	514	513	512
842	Motion picture production & distribution	0.13	R	VR	A	F	A	422	421	521
843	Bowling alleys & billiard parlours	0.04	S	A	A	A	A	225	333	324
844	Golf clubs & country clubs	0.18	A	VR	A	A	A	414	514	513
845	Theatrical & other staged entertainment services	0.19	VR	VR	A	A	A	511	511	511
849	Misc. amusement & recreational services	0.53	R	A	A	F	F	414	512	512
	Services to business management	4.71	VR	R	A	A	A	423	423	433
851	Employment agencies & personnel suppliers	0.27	VR	VR	F+	F+	F	423	422	324
853	Computer services	0.50	VR	VR	A	A	A	511	511	521
855	Security & investigation services	0.30	VR	A	M	M	M	125	115	315
861	Offices of accountants	0.57	R	R	A	F	F	512	522	433
862	Advertising services	0.32	R	VR	F	F	F	333	432	432
863	Offices of architects	0.13	R	R	A	A	A	431	333	333
864	Engineering & scientific services	0.85	VR	A	A	A	A	431	332	333
866	Offices of lawyers & notaries	0.74	R	R	F	F	F	513	522	432
867	Offices of management & business consultants	0.30	VR	VR	A	A	A	343	243	244
869	Misc. services to business management	0.73	VR	A	F	F	F	422	422	422
	Personal services	1.99	S	VR	F+	F+	F+	414	324	423
871	Shoe repair shops	0.03	VS	VR	M	A	A	135	145	135
872	Barber & beauty shops	0.69	S	R	F+	F+	F+	513	421	521
873	Private households	0.50	VS	VR	F+	F+	F+	415	315	414
874	Laundries, cleaner & presser (exc.self-service)	0.31	S	A	F	F	F	343	244	334
876	Self-service laundries & dry cleaners	0.02	A	S	F	F	F	145	155	245
877	Funeral services	0.08	S	R	A	A	A	225	225	225
879	Misc. personal services	0.36	S	VR	F+	F+	F+	414	333	432
	Accommodation & food services	5.73	R	R	F	F	F	323	512	511
881	Hotels & motels	1.38	A	A	F	F	F	234	423	423
883	Lodging houses & residential clubs	0.03	VS	R	F+	F	F	135	135	235
884	Camping grounds & trailer parks	0.11	R	VR	A	A	A	315	325	414
886	Restaurants, caterers & taverns	4.21	VR	R	F	F	F	422	511	611
	Miscellaneous services	2.15	R	A	A	A	F	334	333	323
891	Labour organizations & trade associations	0.27	A	R	F	F	F	244	244	244
893	Photographic services, n.e.s.	0.15	R	A	F	F	F	422	512	422
894	Automobile & truck rental	0.10	VR	R	A	A	A	422	511	511
895	Machinery & equipment rental	0.18	R	VR	A	A	A	421	431	511
896	Blacksmithing & welding shops	0.14	VR	A	M+	M	M	333	432	333
897	Miscellaneous repair shops	0.10	R	S	M	A	A	234	333	234
898	Services to buildings & dwellings	0.51	R	R	F	F	A	333	333	323
899	Miscellaneous services, n.e.s.	0.69	VR	A	F	F	F	225	324	324

Table 9-1: (Concluded)

	Div.11 - Public administration & defence	7.56	A	A	A	A	A	333	333	343
	Federal administration	3.26	S	A	A	A	A	332	333	332
902	Defence services	1.11	VS	A	M	A	M	431	432	421
909	Other federal administration	2.15	A	A	A	F	F	333	333	343
	Provincial administration	2.25	A	A	A	F	F	324	333	243
931	Provincial administration	2.25	A	A	A	F	F	324	333	243
	Local administration	2.03	A	A	A	A	A	333	343	343
951	Local administration	2.03	A	A	A	A	A	333	343	343
	Other government offices	0.01	VS	A	F	F	F	243	154	154
991	Other government offices	0.01	VS	A	F	F	F	243	154	154
	Div.12 - Unspecified or undefined industries	2.95	VS	A	F	F	F	414	215	315

Table 9-2: Break Point Values Used in Industry Characteristics Taxonomy

Field	Break Points 1	2	3	4
Growth rate -- 1971-81	-0.49	1.72	4.64	7.67
Growth rate -- 1981-86	-6.13	-2.17	2.50	5.81
Female proportion -- 1971	0.05	0.12	0.36	0.60
Female proportion -- 1981	0.09	0.17	0.44	0.67
Female proportion -- 1986	0.10	0.19	0.44	0.68
Proportion under 35 -- 1971	0.33	0.42	0.49	0.55
Proportion 35-54 -- 1971	0.33	0.38	0.43	0.46
Proportion 55 and over -- 1971	0.08	0.11	0.16	0.21
Proportion under 35 -- 1981	0.42	0.48	0.54	0.61
Proportion 35-54 -- 1981	0.30	0.34	0.38	0.42
Proportion 55 and over -- 1981	0.08	0.10	0.13	0.18
Proportion under 35 -- 1986	0.38	0.44	0.52	0.58
Proportion 35-54 -- 1986	0.32	0.37	0.43	0.47
Proportion 55 and over -- 1986	0.07	0.10	0.13	0.17

Note: The definitions of break points are provided in the text.

Table 9-3: Industry Growth Rates -- Comparison of Categories in 1971-81 and 1981-86

Category in 1971-81	Category in 1981-86 VS	S	A	R	VR	Total
VS	6	8	8	2	0	24
S	9	16	15	9	1	50
A	2	18	52	20	7	99
R	4	7	16	12	7	46
VR	1	2	8	3	3	17
Total	22	51	99	46	18	236

Note: Figures in the table are numbers of industries in the various categories; industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 9-4: Industry Male/Female Employment Proportions -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	F+	F	A	M	M+	Total
F+	22	3	0	0	0	25
F	2	39	7	0	0	48
A	0	8	81	7	0	96
M	0	0	5	34	6	45
M+	0	0	0	8	14	22
Total	24	50	93	49	20	236

Note: Figures in the table are numbers of industries in the various categories; industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 9-5: Industry Proportions of Workers Under 35 -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	1	2	3	4	5	Total
1	7	6	5	0	0	18
2	8	18	14	4	0	44
3	3	17	57	21	3	101
4	4	2	16	17	10	49
5	0	0	6	6	12	24
Total	22	43	98	48	25	236

Note: Figures in the table are numbers of industries in the various categories; industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 9-6: Industry Proportions of Workers 35-54 -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	1	2	3	4	5	Total
1	10	6	6	2	0	24
2	10	20	9	8	2	49
3	2	21	52	10	5	90
4	0	2	20	20	8	50
5	0	1	5	7	10	23
Total	22	50	92	47	25	236

Note: Figures in the table are numbers of industries in the various categories; industries with fewer than 2,500 workers in any of the three census years are excluded.

Table 9-7: Industry Proportions of Workers 55 and Over -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	1	2	3	4	5	Total
1	12	7	4	0	0	23
2	7	16	20	5	0	48
3	3	20	57	19	2	101
4	0	4	15	18	6	43
5	0	0	3	8	10	21
Total	22	47	99	50	18	236

Note: Figures in the table are numbers of industries in the various categories; industries with fewer than 2,500 workers in any of the three census years are excluded.

PART III DEMOGRAPHIC CHARACTERISTICS OF EMPLOYMENT: OCCUPATIONS

CHAPTER 10: OCCUPATIONAL DISTRIBUTION AND GROWTH

We have considered the world of work from the point of view of an industrial classification system; in this chapter we reconsider the same reality but view it using the classification of occupations provided by Statistics Canada (see Statistics Canada, 1971, 1988). This system, referred to as the Standard Occupational Classification (SOC), closely resembles the Canadian Classification and Dictionary of Occupations (CCDO) and is often referred to in that way (Canada Department of Manpower and Immigration, 1971). It consists of just under 500 titles, varying somewhat from census to census. Here we use the 1971-based code, which has 484 titles. That is a larger number of categories than in the industry code (264) and so the occupational classification is somewhat more fine-grained. However, the occupations can be considered at levels of aggregation similar to those for industries.

While we have worked directly with the major groups and divisional aggregations provided in the Statistics Canada industry code, there are reasons for doubting the value of the corresponding groups suggested in the SOC/CCDO classification. (See Pineo, Porter and McRoberts, 1977, for example.) We therefore work with an alternative grouping system that has come to be known as the Pineo-Porter-McRoberts code (PPM). This system, which identifies 16 categories, resembles that of the Registrar General in the United Kingdom and the Alba Edwards system of the United States census. It has been used extensively and tested repeatedly by sociologists. (See, for example, Jones, 1980, and Johnston and Ornstein, 1985.) The sixteen categories have generally familiar names – professionals, supervisors, skilled crafts and trades, etc. – and are felt by sociologists to form a gradient according to socioeconomic status, ranging from the liberal professions (called self-employed professionals in the scheme) down to farm labourers.

Industrial classifications group workers according to the product or service produced, and thus capture within them the entire range of labour services associated with production. This guarantees some diversity within an industry, diversity that is likely to involve some age heterogeneity. Occupational classifications, on the other hand, group workers according to the kinds of activity they perform. For example, plumbers working in a hydro-electric plant are grouped with those in home repair and in new construction since they all do the same kind of work. This grouping by similarity may lead to greater age homogeneity within occupations, as compared to industries. (On trends over the period 1971-86 in the distribution of occupations among industries, at a rather high level of aggregation, see Silver, 1989.)

A further difference may be noted. Occupations themselves carry some status considerations, meaningful to the general public, which it appears cannot be wholly reduced to the rewards and demands of the work itself. In this they differ from industries, which are usually considered in a much more utilitarian manner – from the points of view of workers' concerns about pay levels and industry's economic stability, for example. But occupations have another dimension: they are directly evaluated, as relatively "good" or "bad" jobs.

While more poorly paid, the public may regard a member of the clergy as having an occupation with greater "worth" than, say, an insurance salesman. Thus one might anticipate that labour force adjustments that involved shifts towards lower status occupations would be regarded as undesirable.

Varying Rates of Growth

We have noted that employment grew rapidly from 1971 to 1981, and then at a considerably more moderate pace from 1981 to 1986. Of course, this growth was not evenly distributed across occupations. In Table 10-1 we single out the fifteen occupations that grew the fastest and the fifteen that had the slowest rates of growth between 1971 and 1986. (Smaller occupations, defined for this purpose as those with fewer than 1500 in either census, are excluded. Note, too, that as in the case of industries, occupations among those referred to in Table 10-1 as "mostly slowly growing" may, in fact, have had negative growth rates – i.e., they may have declined.) In focusing on these extreme cases one should keep in mind the possibility that errors of various kinds may have crept in, such as subtle shifts in census coding or changes in the way people describe their jobs. But subject to that caution, the table does make the point that quite marked differences in rates of growth have occurred.

Reflecting the recent surge in the use of computers, systems analysts and computer programmers is one occupation that might well be expected among those that have grown rapidly. However, if one theme dominates the list it is that the fastest-growing occupations are largely in the area of management. The word "management" is found in ten of the fifteen titles. This massive growth in the number of managers is also evident from the data provided in the Statistics Canada (1988) publication, *Occupational Trends, 1961-1986*, which shows for the census' own category of managerial, administrative and related occupations an increase from 370 thousand to more than 1 million between 1971 and 1986. Why the number of managers should have increased by more than 170 per cent while overall employment increased by only 48 per cent is far from obvious. The growth was not so much in such older managerial titles as accountant or personnel officer as in more abstract titles, such as financial manager, or personnel and industrial relations management. And we have noted already that growth was not particularly great in the government sector during this period. Administrators unique to government, for example, grew at a more moderate pace, approximately doubling over the fifteen years. Thus those titles showing the most spectacular growth appear to have been largely in the private sector.

The slowest growing occupations include many for which such growth seems reasonable, at least in retrospect. Farm workers, watch repairers, clothes pressers, typists and office machine operators have all succumbed to technological change. Several of the categories here (and among those growing quickly as well) are of the "not elsewhere classified" (nec) variety. Those are the residual categories within census groupings. Thus "textile processing, nec" refers to a residue of jobs in the textile industry after the major kinds of work – spinning, winding, weaving, knitting, bleaching, inspecting, etc. – have been identified. Such residual categories could be expected to show some erratic growth patterns. This is where new titles first find their way into the census scheme, and also perhaps the place where the census will park occupations known to be rapidly declining and soon to disappear.

Changes in Relative Socioeconomic Position

The patterns suggested in Table 10-1 are shown in a more reliable form in Table 10-2, which aggregates the occupations into the socioeconomic categories of the PPM code. This aggregation virtually eliminates any serious consequences of sampling fluctuation in the estimates for any single occupation.

The bottom line of the table shows the now familiar pattern of rapid growth in employment from 1971 to 1981 (almost 3 million "new jobs") and the slow growth from 1981 to 1986 (531,000 "new jobs"). The body of the table provides information about the shares of the 16 socioeconomic categories. The growth in numbers of managers suggested by the previous table shows itself again; the percentage categorized as high level management increased from 1.4 to 2.5 per cent of total employment between 1971 and 1981 (the annual growth rate was 9.3 per cent), and continued to increase, despite overall slow growth, from 1981 to 1986. Over the fifteen-year period as a whole, the percentage in high level management more than doubled. A similar, but somewhat more modest trend is found among middle managers. Some of this growth may reflect a reclassification of those formerly called supervisors or foremen, since these two categories show, if anything, a modest decline. Earlier comments on this decline by Pineo (1985) may be noted. The larger shift observed in the latter study appears to have been mainly the result of census reclassification; with a common code for 1971 and 1981 the change now appears considerably more modest.

The PPM coding system finds not quite the million managers for 1986 reported by Statistics Canada (1988). The difference is due largely to the classification of "accountants, auditors and other financial officers" as "employed professionals" rather than "managers" in the PPM system.

Growth of employment was slower for both self-employed and employed professionals than for semi-professionals, but above average for all three, and their shares in total employment increased over the period. Technicians also grew somewhat more rapidly than the average. In general one might say that the highest status occupations – managerial, professional, semi-professional and the like – showed above average growth. Collectively they accounted for 14.7 per cent of employment in 1971 and 20.4 in 1986.

When speaking of proportions, growth in one category must be matched by decline elsewhere. But it was not the lower white collar jobs that showed decline. Growth was above average in two of the three categories of the clerical-sales-service groups, and only slightly below in the third. Those three categories may be combined with all of the ones from self-employed professionals down to supervisors to form what traditionally have been called "white collar" occupations. That component of employment grew from 53.0 per cent to 58.5 in 1981, and then continued growing to 61.3 per cent of the total by 1986. In part, this is the occupational side of the growth noted earlier in the service industries.

Decline characterizes the farm owner-operator category, and near-decline that of farm labourers. Together, those two categories formed 5.9 per cent of total employment in 1971 but only 3.9 per cent in 1986. Growth among farm labourers might be expected as agribusiness develops. If that is to happen, the modest shift from 1.9 per cent in 1981 to 2.1 per cent in 1986 is the only indication, and so the change appears slight. It is possible,

however, that future growth in agribusiness will be mostly in occupations with such urban-industrial titles as truck driver, machine operator and the like.

The other area of relative decline is in traditional blue collar jobs – skilled crafts and trades, semi-skilled crafts and trades, and unskilled labourers. Slow growth over the fifteen-year interval is observed at the skilled, semi-skilled and unskilled levels. Many of those are jobs found in what came to be called the "smoke stack industries." Their declining share in total employment is, of course, not limited to Canada.

Changes of this kind have been occurring throughout the 20th century. An early classic in sociology, Ramsøy's *Recent Trends in Occupational Mobility* (1953), describes the trends found in the U.S. during the first half of the century: sharp declines in farming were matched then by increases in blue collar work. And indications were found of a later trend: there was a decline in the lowest category of blue collar work, in which employees were used as an energy source in lifting, shovelling and the like. Growth was found particularly in the semi-skilled work of the factory, the kind of occupation that could be learned in about three months. Such changes have occurred in Canada as well but the Canadian data reveal a further development – continuing decline of farming, but without compensatory growth in the blue collar sector. Instead, there was below-average growth, not only in unskilled labouring, but also in both skilled and semi-skilled crafts and trades.

Until recently there was a consensus among sociologists that those changes should be considered an "upgrading" of the labour force. Old jobs were being replaced by new ones demanding more skills and education, a trend that was paralleled by increased levels of educational attainment among younger workers. The patterns observed in Table 10-2 would have been uncritically accepted ten or twenty years ago as evidence of a further upgrading trend. Since that time there has been a controversy within the discipline of sociology on this issue. That flows of labour from farm owning-operating into urban manual labour should be considered unambiguous evidence of upgrading might well have been questioned. But the core issue debated recently has been the extent to which the increased educational qualifications demanded of workers, coupled perhaps with more flattering job titles, should be considered evidence of change in the quality of work, or whether it was simply a growth in "credentials" rather than the skills required. In its extreme form the criticism argued that the true trend was one of "de-skilling." Some resolution of this debate seems now to have been reached in the U.S., as a recent author has summarized: "...losses of skill in some instances have been more than made up for by new skilled occupations and by technological and organization changes that upgrade skill in old occupations... Changes in occupational composition as measured by census categories show an overall pattern of upgrading..." (Simpson, 1989, p. 573).

Nevertheless, from this debate some caution was learned and one must consider the upgrading shown in Table 10-2 (seen most clearly in the rise over fifteen years in the proportion white collar from 53.0 to 61.3 per cent) as only partly true upgrading. Some glorification of job titles and hiring of over-qualified individuals who were available no doubt form a part of the trend.

Increasing Participation by Women

We have noted that the fifteen years covered by this study was a period of steadily increasing participation of women in the labour force. In 1971 only 34.3 per cent of employment was female; by 1986 the proportion had risen to 42.5 per cent. Growth of female employment slackened somewhat after 1981 but even then it accounted for most of the increases: between 1981 and 1986 male employment grew by a mere 33,000 jobs while female employment grew by close to 500,000.

This trend follows that in the U.S. where recent authors have commented, "One of the most dramatic changes of this century has been the increase in women's labour force participation after World War II" (Jones and Rosenfeld, 1989, p. 666). The same authors add that "During the same period, however, occupational sex segregation has changed little, although there is some evidence of a decrease recently" (p. 666; see also Jacobs, 1989). That is to say, when the participation of women in the labour force is examined from the perspective of the occupations into which women are drawn there appears to have been little change. Women continue to enter what are known as the "traditionally female" occupations. That tendency has been noted for Canada as well. (See, for example, Pineo, 1985.) In the present section we add some further information bearing on this issue, based on the opportunity provided by the identical coding of occupations for 1971 through 1986 in the census data that we are working with.

The pattern that has been observed of females ending up in certain traditional occupations is shown in part in Table 10-4 for 1971, and the tendency for the pattern to persist is evidenced by Table 10-5, which provides 1986 data. Some fifteen occupations held well over half (57.5 per cent) of all female employment in 1971. The jobs were largely what would be expected from a familiarity with the work world: women are found disproportionately in middle-level clerical and sales work, in teaching and nursing, and in some personal service occupations. In 1971, farm work and sewing machine operation were significant as female occupations as well. Women in 1971 were crowded into those few occupations; the same occupations accounted for only some 12 per cent of male employment. Most "women's occupations" tend to be of middling socioeconomic status, which is to say they include mostly jobs in the lower white collar segment of the work force. Teachers and nurses were relatively high status, farm workers and janitors very low.

Table 10-4 suggests that not much has changed. Almost half (49.3 per cent) of female employment was in the largest fifteen occupations – a smaller percentage than in 1971 but still very large. Also, nine of the occupations found on the 1971 list appear again in 1986, although the rank order among them has shifted. Some changes reflect technological developments. Typists disappeared but EDP equipment operators replaced them. Receptionists are added to the list, perhaps because that category includes information clerks. Sewing machine operation has gone. So also has farm work. (It would seem that the changes in farming are complex and perhaps worthy of special study; a change in the census treatment of unpaid family workers may be of some importance.) Secondary school teachers are no longer among the top fifteen, and nurses aides and personal service nec have also gone. Replacing those occupations are ones such as hairdressers, chefs and cooks, sales supervisors, and accountants, auditors and other financial officers. Sales supervision and the accountant set of occupations are of comparatively high status and reflect some relative gain for women. Even so, the dominant impression gained from comparing the two tables is one of relatively little change in the location of female

employees despite the great growth in the overall level of participation of women. Oppenheimer (1970), in a work considered classic by U.S. researchers, argued that the growth of the female labour force in that country was driven by increased demand for workers in the traditional female occupations. Our data tend to show evidence favouring her argument for Canada as well. Had major growth in the female labour force occurred at a time when the demand was great in male-dominated occupations, perhaps women would now be spread more evenly across the occupational spectrum.

The pattern of relatively little change in the occupational distribution of female workers despite rapid growth in their total participation is again borne out by Table 10-5, which is based on the PPM classification system. In 1986, as in 1971, the bulk of female employment was found in the skilled, semi-skilled and unskilled clerical, sales and service categories. This is balanced by large percentages of men at the three skill levels of the crafts and trades categories. Beyond this, we note that both males and females show a pattern of "upgrading," with most growth taking place in categories above the foremen level. But the growth is somewhat different for men and women. From well behind in 1971, women reduced the gap with men in high and middle management and in the supervisory category – undoubtedly an important step. Relatively large percentages of women are found in the employed professional and semi-professional categories, and there is evidence of strong growth in the self-employed professional category also. The farming occupations continue to display their idiosyncratic patterns. Men greatly outnumber women in the occupation "foremen" and technicians, though a small category, has about the same relative representation of women as of men. (Solely for convenience we have retained the somewhat dated and inappropriate title "foremen" to refer to both males and females. That title was used in the 1971 SOC system and in the 1977 PPM classification based on that system.)

The final two lines of Table 10-5 address more directly the question of whether men and women experienced similar patterns of upgrading of occupational status. Two definitions of white collar are used: the traditional "broad" definition used earlier in this chapter and a "narrow" definition that excludes semi- and unskilled clerical, sales and service occupations. The broad definition includes about 80 per cent of female employment, as compared to some 40 to 45 per cent for males. With the narrow definition, from 41 to 49 per cent of female employment is included, as compared to 30 to 35 per cent for males. By these rough measures employed women appear to have enjoyed an overall status advantage throughout the period. As for which sex gained more between 1971 and 1986, the answer depends upon which definition is used. Given the narrow definition, women gained more (an increase of 8.9 percentage points compared to 5.1 for men). Using the broad definition, the gain is less for women (4.1 points) than for men (5.3 points). One is led to conclude that any sex difference is too close to call; a conclusion of roughly equal upgrading for men and women seems warranted.

Measuring Sex Segregation in Occupations

While the trend to increased labour force participation by women is strong and unmistakable, any trend toward less segregation of the sexes in the occupations they hold is modest. Attempts to measure weak trends, rather than settling the question of whether they are real or not, often add to the confusion as different measures of segregation produce conflicting conclusions. The weakness of the trend is borne out by this ambiguity, which is

not necessarily evidence of inadequacy of method. Strong trends will show no matter what measure is used.

The three measures of segregation we have chosen, and the results of employing them, are shown in Table 10-6. Each measure requires some explanation. The first is the Pearson coefficient of correlation between the proportions of males and females found in the 484 occupations. This kind of correlation can be referred to as a "profile correlation" to connote the manner in which it compares the overall distribution of two groups, treating each category equivalently even though some may contain few cases while others contain many. Correlations computed in this way are often very high. For example, correlating the number of males in an occupation in 1971 with the number of males in the same occupation in 1981 produces a correlation coefficient of 0.95, representing the commonsense observation that the relative size of the occupations changes only slowly. If females were distributed across the labour force much as males are – that is, if there were little or no sex segregation – equivalently large correlations should be expected in the first line of the table. Complete absence of segregation would produce a perfect correlation ($r = 1.00$). The actual degree of segregation is so great that the correlation for 1971, for example, is only 0.29. But from that base there is indeed a modest increase, representing an apparent decrease in segregation over the fifteen years. By 1986 the correlation coefficient had increased to 0.35.

The second measure of segregation is the index of dissimilarity. (We have used the ID measure in earlier chapters also.) In this application the calculation is based on the absolute differences between the percentage of males and the percentage of females found in each of the 484 occupational categories. The ID represents the proportion of one sex that would have to shift to a different occupation to achieve complete desegregation, i.e., identical distributions for the two sexes. Accordingly, the larger the number (to a maximum of 1.00), the higher the degree of segregation. In 1971 the value was 0.66. Again one sees evidence of desegregation as the index falls to 0.57 by 1986.

The final measure is an adaptation of one developed independently by Bell and by Leiberson. It is discussed, as is the index of dissimilarity, in Massey and Denton (1988). The original index captured the probability that a random encounter with another worker in the same occupation would be with one of the same sex. Thus the higher the index value the higher the degree of segregation; total segregation would produce a value of 1.00. The adaptation discussed by Massey and Denton takes into account the overall percentage of females in employment and such adaptation would appear to be desirable since the percentage female changed appreciably over the fifteen-year span. With this adaptation the resulting statistic is the same as that referred to in the literature as the "eta coefficient," a measure used for many purposes in sociology and psychology. This final measure confirms the trend indicated by the others. The eta coefficient is highest in 1971, at 0.70, and falls to 0.65 by 1986. Despite our caveats about the difficulty of measuring modest social trends, all three measures show the same general pattern. Even so, other indices might yield contradictory results. We note that the three are not consistent in pinpointing when the greatest change occurred. The dissimilarity index suggests that change was greatest in the 1971-1981 period; the other two find greater change in the 1981-86 period. (While our finding of recent declines in occupational sex segregation in Canada is generally consistent with U.S. experience, as described by Jones and Rosenfield, 1989, we would be unwilling to draw the conclusion from our mixed results that changes in Canada have been the same as those in the U.S.)

CONCLUSIONS

We can claim little novelty for the material in this chapter. Both the upgrading of the labour force and the degree of sex segregation are major research areas and we can claim to have offered only a little new evidence to add to the continuing discussion. We have shown that the trend toward upgrading can easily be demonstrated with the data at hand, for both males and females. But we caution that at least some of the upgrading is probably specious. We return to this concern in Chapter 13 where we are able to add information about the changing educational levels in the various occupations.

Our data reflect the major increases in rates of female labour force participation of recent years. Because of the identical occupational coding for all three census years, we are able to examine consistent data bearing on the matter of sex segregation. We note that a high degree of sex segregation persists, but our evidence on trends suggests that a steady though modest decline has occurred. (Again we caution that the measurement of segregation is a well trodden field and others might draw different inferences about trends from the same data.)

The rapid growth in the number of managers is a matter that, to our knowledge, has not been given much attention in occupational analyses. It has been observed for a long time that supervisory and management jobs form a much larger proportion of all jobs in the Canadian and U.S. economies than in the European economies, and there have been comments about an "over-managed economy" in the popular press. However, the rapid growth in the number of managers seems to have received little systematic attention. A question is why, at this point in its development, the private sector of the Canadian economy has experienced such an increase at the management level. Some confidence that the trend is real is given by the explosive growth of business schools in recent years. We suspect that the rate of growth found for managerial jobs between 1971 and 1986 is too great to be sustained for long, and some concern about over-production by business schools in the near term may therefore be warranted.

Compared to the great attention given to the overall growth of the labour force and the position of women within it, we note that relatively little concern has been given to occupational age patterns. In the next chapter we address the issue of how age varies across occupations and socioeconomic classes and what changes have occurred in the age patterns.

Table 10-1: The Most Rapidly and Most Slowly Growing Occupations, 1971-86

	SOC Code (1971)	Employment 1971	Employment 1986	Ratio 1986/71
Most Rapidly Growing Occupations				
Financial management	1135	7,665	58,880	7.682
Personnel & industrial relations management	1136	3,965	29,565	7.456
Management, transport and communications	1147	2,210	16,205	7.333
Services management	1142	1,985	14,010	7.058
Sales & advertising management	1137	12,325	86,810	7.043
Production management	1143	7,270	50,020	6.880
Other managers & adminstrators, nec	1149	20,850	127,015	6.092
Others, nec	7199	6,605	38,350	5.806
University teaching & related, nec	2719	2,550	14,705	5.767
Management, natural science & engineering	1131	2,490	13,295	5.339
Management, construction	1145	4,120	20,885	5.069
Management, social science & related	1132	2,075	9,640	4.646
Systems analysts, computer programmers & rel.	2183	22,015	97,475	4.428
Architects & engineers, nec	2159	3,325	14,600	4.391
Teachers of exceptional students, nec	2795	5,210	21,980	4.219
Percent of Total Employment		1.29	5.30	
Most Slowly Growing Occupations				
Farm workers	7182	195,105	127,970	0.656
Tobacco processing	8293	2,980	1,920	0.644
Watch & clock repairers	8587	2,440	1,500	0.615
Pressing	6165	13,180	8,080	0.613
Typists & clerk-typists	4113	82,940	50,840	0.613
Route drivers	5193	23,850	13,690	0.574
Textile processing, nec	8279	4,610	2,545	0.552
Supervisors: other clerical & related, nec	4190	48,345	24,980	0.517
Planing, turning, shaping & related wood mach	8355	6,515	3,345	0.513
Office machine operators	4141	19,500	9,560	0.490
Post-secondary school teachers, nec	2793	10,310	4,550	0.441
Machine tool operating	8315	25,950	9,630	0.371
Inspecting, etc: nec	9916	9,190	3,200	0.348
Other architecture & engineering, nec	2169	7,795	2,685	0.344
Labouring, etc: other product fabricating,etc.	8598	6,975	2,140	0.307
Percent of Total Employment		5.66	2.30	

Note: Occupations with fewer than 1,500 workers in either census year are excluded. Occupations among those referred to as "most slowly growing" may, in fact, have had negative growth rates -- i.e., they may have declined.

Table 10-2: Employment, 1971, 1981, and 1986 -- PPM Occupational Groups

	Number ('000s)			% of Total			% Growth Rate		
	1971	1981	1986	1971	1981	1986	71-81	81-86	71-86
Self-employed professionals	57	94	111	0.7	0.9	1.0	5.2	3.3	4.6
Employed professionals	587	831	914	7.2	7.5	7.9	3.5	1.9	3.0
High-level management	115	280	354	1.4	2.5	3.1	9.3	4.8	7.8
Semi-professionals	312	620	759	3.8	5.6	6.6	7.1	4.1	6.1
Technicians	127	204	206	1.6	1.8	1.8	4.9	0.2	3.3
Middle management	208	444	524	2.6	4.0	4.5	7.9	3.4	6.4
Supervisors	450	528	557	5.5	4.8	4.8	1.6	1.1	1.4
Foremen	277	360	328	3.4	3.3	2.8	2.7	-1.8	1.1
Skilled clerical-sales-service	630	1,115	1,155	7.8	10.1	10.0	5.9	0.7	4.1
Skilled crafts and trades	878	1,154	1,101	10.8	10.5	9.5	2.8	-0.9	1.5
Farmers	233	225	205	2.9	2.0	1.8	-0.3	-1.8	-0.8
Semi-skilled clerical-sales-service	1,084	1,675	1,787	13.4	15.2	15.4	4.4	1.3	3.4
Semi-skilled crafts and trades	797	1,121	1,071	9.8	10.2	9.3	3.5	-0.9	2.0
Unskilled clerical-sales-service	375	459	523	4.6	4.2	4.5	2.0	2.6	2.2
Unskilled labourers	1,068	1,362	1,396	13.2	12.3	12.1	2.5	0.5	1.8
Farm labourers	243	212	247	3.0	1.9	2.1	-1.3	3.0	0.1
Not stated	677	355	332	8.3	3.2	2.9	-6.2	-1.3	-4.6
All Occupations	8,117	11,039	11,570	100.0	100.0	100.0	3.1	0.9	2.4

Note: Growth rates are annual averages.

Table 10-3: The Fifteen Occupations with the Largest Number of Female Workers in 1971

Secretaries, stenographers	229,660
Sales clerks, salespersons, commodities, nec	162,425
Bookkeepers, accounting clerks	129,025
Elementary, kindergarten teachers	118,810
Nurses, graduate except supervisors, training	98,440
Cashiers, tellers	95,315
Food, beverage serving	93,270
Farm workers	91,580
Typists, clerk-typists	79,320
General office clerks	74,165
Personal service, nec	53,215
Sewing machine operators: textile, similar materials	53,130
Janitors, charworkers, cleaners	51,860
Nursing aids and orderlies	50,620
Secondary school teachers	48,690
All 15 Occupations	1,429,525
Percent of Total Female Employment	57.5

Note: The "not stated" occupation category is omitted.

Table 10-4: The Fifteen Occupations with the Largest Number of Female Workers in 1986

Secretaries, stenographers	393,315
Bookkeepers, accounting clerks	300,660
Sales clerks, salespersons, commodities	292,100
Cashiers, tellers	230,155
Nurses, in-training, graduate except supervisors	204,345
Food, beverage serving	174,870
Elementary, kindergarten teachers	146,330
General office clerks	118,445
Receptionists, information clerks	94,575
Supervisors: sales, commodities	90,280
Janitors, charworkers, cleaners	87,950
EDP equipment operators	81,440
Chefs, cooks	77,565
Accountants, auditors, other financial officers	70,230
Barbers, hairdressers, related	66,130
All 15 Occupations	2,428,390
Percent of Total Employment	49.3

Note: The "not stated" occupation category is omitted.

Table 10-5: Percentage Distribution of Employment by Sex, 1971, 1981, and 1986 -- PPM Occupational Groups

	Males			Females		
	1971	1981	1986	1971	1981	1986
Self-employed professionals	1.1	1.3	1.4	0.2	0.3	0.5
Employed professionals	7.4	7.9	8.0	8.8	7.6	8.3
High-level management	2.1	3.6	4.2	0.5	1.2	1.8
Semi-professionals	2.9	3.9	4.4	6.8	8.7	9.9
Technicians	1.8	2.1	1.9	1.4	1.7	1.7
Middle management	3.3	5.0	5.3	1.8	2.8	3.7
Supervisors	6.9	5.2	5.2	4.3	4.5	4.6
Foremen	5.4	5.3	4.8	0.3	0.4	0.4
Skilled clerical-sales-service	4.1	4.5	4.1	17.2	19.3	18.6
Skilled crafts and trades	16.9	17.1	15.8	1.6	1.4	1.7
Farmers	4.5	3.2	2.9	0.3	0.5	0.4
Semi-skilled clerical-sales-service	7.9	7.8	8.6	27.9	27.5	25.7
Semi-skilled crafts and trades	12.5	12.8	12.1	7.2	7.1	6.1
Unskilled clerical-sales-service	2.9	2.1	2.3	9.4	7.6	7.8
Unskilled labourers	17.4	16.1	16.3	8.3	7.7	7.1
Farm labourers	3.0	2.2	2.5	3.9	1.7	1.8
Percent White Collar						
Narrow definition	29.6	33.5	34.7	41.1	46.1	49.0
Broad definition	40.3	43.4	45.6	78.4	81.2	82.5

Note: The narrow and broad definitions of "white collar" are given in the text.

Table 10-6: Measures of Sex Segregation in Occupational Employment, 1971, 1981, and 1986

	1971	1981	1986
Correlation Coefficient	0.29	0.30	0.35
Index of Dissimilarity	0.66	0.61	0.57
Eta Coefficient	0.70	0.68	0.65

Note: The calculations are based on detailed SOC occupations. The category "not stated" is excluded.

CHAPTER 11: AGE-SEX PATTERNS OF OCCUPATIONAL EMPLOYMENT

Relatively little research appears to have been done to investigate age patterns of occupational mobility. The U.S. Bureau of the Census conducted a series of studies endeavouring to measure turnover in occupations (Hayghe, 1974; Horvath, 1982; Rytina, 1982; Sehgal, 1984). Also worthy of note is an interesting recent Canadian study by Baldwin and Gorecki (1990). We note too one indirect approach to the problem – estimating rates of entry into and departure from occupations using life table methods (Evans and Laumann, 1983). Based on a unique data set from the U.S. census in which respondents reported both current and previous occupational titles, this research suggests extremely high rates of interchange among occupations. However, it is flawed by an assumption of zero error in the data and so can be considered only suggestive. But even moderate rates of turnover, especially if they vary from one occupation to another, could have substantial age distributional effects. Added to this, the influx of new workers as the baby boom cohorts entered the labour force has had the potential for bringing about major changes in age patterns.

One would expect variation in age structure across occupations. For example, certain sequences of occupations are felt to form "careers". (See Wilensky, 1960.) At one time at least, newspaper offices began workers as copy boys, promoted them to reporters and rewarded successful performance by making them editors. Similarly, private and public bureaucracies have entry level junior management positions and high level command positions that are awarded after years of successful performance. Perhaps on the factory floor the equivalent chain of jobs leads to foreman as the final posting for a successful worker, although that expectation may reflect an earlier time when distinctions between factory floor and office were stronger. Insofar as sequences such as those exist – and they may not for much of the labour force – some variation in age structure must occur as entry level jobs would tend to a low average age and senior management jobs to a high one. Other expectations deriving from casual inspection of the occupational world would also lead one to expect specialized age patterns. The older pattern of women entering the labour force before marriage, withdrawing at marriage or when children are born, and then possibly re-entering after the children are grown would lead to a bimodal distribution in jobs such as elementary school teacher or nurse. While that pattern may be quite obsolete today, traces of its earlier strength could perhaps be found. (See, for example, the discussion in Ostry, 1968.) Finally, occupations, like industries, grow and decline, and so active recruitment will occur in limited historical periods (as for university professors in the early 1960s). Such pulses in growth and decline would be echoed by specialized shapes in the resulting population pyramids associated with particular occupations.

Thus we expect that occupations will show distinctive age structures simply because that is the way the work world is organized. Beyond that, we anticipate that there may be baby boom effects on the relative income levels of successive cohorts (as suggested, for example, by Easterlin, 1978, 1980) or on their promotion prospects (Keyfitz, 1973; Cantrell and Clark, 1982; Denton and Spencer, 1987a), as well as other possibilities. Teachers, as shown elsewhere (Denton and Spencer, 1987b), were recruited in great numbers to provide for the "baby boomers" and the current age structure of the teaching profession shows major consequences of that fact. Other jobs will also show the consequences of having serviced the baby boom. The labour force entry of the large cohorts themselves, which is now

virtually complete, must have influenced occupational age patterns and we would expect that the degree of influence would vary from one occupation to another.

It would be unrealistic to expect the census data that we are using to yield information on both "normal" age patterns and also the special effects brought about by the baby boom. Of course no period is ever perfectly "normal" and so this dilemma would be true of any data set. Perhaps the very sharpness of the baby boom effects would make their separate identification easier. In any event, we must plead in advance that certain matters will remain unsettled and that ultimately only further work could settle some of the issues.

Comparing Occupations and Industries

We have suggested the possibility that when the work world is categorized according to occupation rather than industry one might find greater age differentiation. Two measures can be used to test that expectation. The index of dissimilarity (ID) introduced earlier may be re-employed. While the computations in the previous chapter related to sex segregation across occupations, here the ID measure is computed so as to capture the difference in age distribution between each occupation (or occupational group) and that of all remaining employment. Each occupation thus gets an index number measuring the distinctiveness of its age distribution; the (weighted) average of these numbers provides an indication of overall tendencies to distinctiveness and can be compared to equivalent measures based on industry data. Another possibility is to use the eta coefficient again, focusing in this instance on the age distribution in each occupation. We make these computations separately for males and females, having noted earlier the great differences in how men and women are distributed across occupational codes.

The expectation of greater variation across occupations is borne out more strongly for men than for women. For men the mean index of dissimilarity across the 264 industries in 1986 is 0.13, as compared to 0.17 for the 484 occupations. And the eta coefficients show the same pattern: 0.25 for industries and 0.35 for occupations. (One might feel concern that the number of coding categories is the source of these differences. But even when occupations are grouped into the PPM codes, thus reducing the number of categories to only 16, the mean ID for males is 0.14 and the mean eta value is 0.26, both of which exceed the corresponding means for the 264 industry categories.) Thus for men at least there is evidence of greater age differentiation among occupations than among industries. For women, the pattern is weaker but points in the same direction. In 1986, the average ID for occupations (0.15) was only barely higher than that for industries (0.14) in the case of women, and the eta coefficients were also close (0.28 for occupations, 0.24 for industries). Thus it appears that age differentiation is only slightly greater across occupations than across industries for women, but that the difference is more marked for men.

The figures noted above are repeated in Table 11-1 which gives also the corresponding numbers for the 1971 and 1981 census years. The general pattern persists. Age plays a greater role in occupational location at all three dates, but more so for males than for females.

Table 11-1 would show any trend in the degree of age differentiation but the general pattern is one of continuity rather than change. The average ID is virtually unaltered for both industries and occupations over the fifteen-year span. The eta coefficients show some evidence of change: for women they decrease for occupations and increase for industries; for men they show some increase for industries. But even those differences are modest. Since the age distribution of total employment in each census year is the point of comparison, and that changed as the "baby boomers" entered the labour force, the absence of apparent trend means that, on average, the occupations and industries tended to share equally in absorbing the new entrants. But this overall evidence of stability covers considerable variation for certain occupations, as shown later in the chapter.

Old and Young Occupations

The simplest manner in which occupations might differ in their age structures would be shown by the mean ages. Some occupations have older practitioners, for a variety of reasons, and this shows in high mean ages. Others are primarily jobs for the young. In Table 11-2 we show those occupations with the highest and lowest mean ages at the time of the 1986 census. The continuity in age is shown by including means for 1971 and 1981. Occupations with fewer than 1500 workers in any year are omitted, as is the category "occupation not stated." (See the appendix to this chapter.)

Among the fifteen occupations with the highest mean ages are a number that carry some degree of authority. General managers and other senior officials are in the highest-level occupations of the private sector, and they are senior also in age. Teaching administrators and postmasters are also senior positions, coming typically in the later years of a career of related work. Several titles include foremen and supervisors; apparently those jobs still represent final stages of careers for some part of the labour force. High mean age is found too for what are probably declining occupations such as watch and clock repair, and this may be a factor influencing the age of those in railway transport or stationery engineering. Farm owners and operators are also of advanced age. This again could be because of the decline of the sector (the numbers employed fell over the fifteen years) but one sees no change in the mean age. Farm owner-operator is possibly the end of a career sequence to some extent; the mean age of farm labourers is, in contrast, very low.

University teachers are among the fifteen oldest occupations; their average age is related to the higher rates of staffing in the 1960s and 1970s in response to the baby boom and the general expansion of universities, but their advanced training would make it likely that they would show a high mean age in any period. Religious occupations are also included. Nuns and brothers "nor" may be in this group partly by definition: the notation "nor" means "not otherwise reported" and implies that nuns and brothers who say they are also school teachers, for example, would be coded as teachers. Thus, by definition, many of the nuns and brothers may be retired and that would contribute to their very high mean age. But ministers of religion and those captured by the "religious occupations not elsewhere classified" category are also of advanced age. Advanced training and slow growth in the numbers of practitioners are probably relevant factors.

The youngest occupations, on the other hand, carry little authority and tend to be recognizable as "starter occupations" in many cases. Jobs classified as labouring are places one starts in printing, forestry, logging and the like. Other jobs may require physical strength

or agility, such as jobs in "sports and related to sports," and the presumably demanding work of rotary drilling and related activities. A variety of service jobs appear in the list – bartenders, porters, guides, food and beverage waiting, newspaper carriers and service station attendants. One recognizes those as jobs requiring little training and frequently staffed on a part-time basis by students.

Jobs that were "young" or "old" in 1986 tended also to be that way in the earlier censuses, and in general the distribution by age across the occupations is remarkably stable. Correlating the mean age of the occupations (unweighted, omitting occupation not stated) produces a coefficient of 0.95 between 1986 and 1981. The same figure comparing 1981 and 1971 is 0.88, with some of the difference no doubt owing merely to the time span being ten years rather than five. We have noted that profile correlations of this kind are often very large and tend to disguise variation at the more detailed levels, but nonetheless it is against this evidence of considerable stability in relative age patterns that one must evaluate what differences are found. Thus the growth in mean age of university teachers, from 38.2 to 43.4 over the fifteen years, is known to those within the university system to represent a considerable problem. So also a story may lie behind the modest decline, from 47.5 to 45.8, in the mean age of general managers and other senior officials.

Computed separately for men and women, the correlations given above suggest that the age structure may be more volatile for female workers. The overall 1981/86 correlation of 0.95 compares with 0.94 for males and only 0.78 for females. (The 1971/1981 correlation for females is much lower but exclusion of the empty occupations seems necessary; with those omitted it is 0.70.) It is difficult to be categorical about this difference since so many occupations have hardly any women in them and the mean ages are thus not very meaningful. But there is some hint that age may be changing more quickly among the predominantly female occupations, which seems plausible given the more rapid growth of that segment of the work force.

Age Patterns and Socioeconomic Status

Mean ages are given in Table 11-3 for men and women separately in each of the three censuses, for occupations grouped into the socioeconomic codes provided by the PPM classification. The means are the simple arithmetic mean ages of all workers falling into each of the PPM categories.

The last line of the table shows the familiar pattern of change across the three censuses for employment as a whole. The age of all working males averaged to 38.2 in 1971, fell a full year, to 37.2, by 1981 (in response to the entry of the baby boom cohorts), and then climbed slightly, to 37.5, by 1986 (as the baby boomers aged). For women the pattern was sharper: the mean fell by 1.2 years and then rose by 0.7. In all three years female workers were younger than males, on average.

It is rare for the means in any of the socioeconomic categories simply to track the changes in the overall mean. Only 7 of the 16 categories for men show the pattern of a dip and then a rise over the fifteen years and the shifts are magnified or reduced in several instances. A larger number, 10 of the 16, show the dip and rise for women, but again the magnitudes of the shifts are often quite different. In sum, it is clear that occupations did not

share equally in the consequences of the baby boom. We spend much of the balance of this chapter discussing the differences.

Another general feature of Table 11-3 may be noted. Concentrating on the first three columns, which give the means for men, one may note a tendency for the categories higher in the scale (those of higher socioeconomic status), to have higher mean ages. Many of the categories for men above the skilled clerical-sales-service level have means of at least 40. Those below that level rarely have means as high as 40, farm owner-operators being the major exception. Another way of phrasing this observation is to note that there are substantial rank correlations between socioeconomic level and mean age. With self-employed professionals assigned rank 16 and farm labourers rank 1, and the mean ages similarly ranked from highest to lowest, the Spearman rank order correlations are as follows: 1971, 0.37; 1981, 0.57; and 1986, 0.65. This is a further instance of what was shown earlier. Higher status jobs – those involving authority or advanced skill – require seniority. Thus high level management has a mean age for males in 1986 of 43.1. Even foremen were relatively old, at 41.5. In contrast, again for 1986, semi-skilled crafts and tradesmen averaged to only 35.5 and unskilled labourers to only 35.0. We assume that the existence of career sequences, from lower to higher status occupations, underlies this pattern, and that we can conclude from this that such sequences occur for a sufficiently large proportion of the male labour force to show up even in these highly aggregated categories.

Women do not show the same pattern. Instead, high mean ages are found at various levels of the socioeconomic hierarchy. Rank order correlations equivalent to those for men are of negligible magnitude. Self-employed professional males, for example, have a mean age well above the overall male average, whereas for females it is barely above the average in 1971, and below it in the other two years. Following the logic given above, we would conclude that the work world is presented less frequently to women as an orderly sequence of jobs of ascending social status. This is not a novel idea; other studies of survey data have found the same pattern (for example, Goyder, 1985). What we note here is that the categories we employ and the data from the censuses are able to capture effectively this sex difference. How durable the pattern will be is an open question, given the major social changes occurring in female work patterns and their variable distribution across cohorts.

Age Structure of Managerial and Supervisory Occupations

Four categories from the PPM coding system can be grouped meaningfully into occupations involving some degree of authority or supervisory responsibility. High level management consists of nine occupations that involve senior management positions in the private and public sectors. Further down the socioeconomic scale are 19 jobs classified as middle management. (The authors of the original scale noted that the census codes make the distinction between high and middle level management difficult; they endeavoured to have the high management category contain only the most senior jobs in large firms, but the ambiguity in many of the original census codes made this goal only partly achievable. See Pineo, Porter and McRoberts, 1977.) Immediately below middle management are the categories of supervisors and foremen. These are distinguished in the original census codes, and with some exceptions are simply combined in the PPM scale. There are 16 occupations in the supervisory category. These are the immediate supervisors of those doing white collar work – the clerical, sales and service occupations. Foremen oversee blue collar work, especially in the factories. This is a large category, with 37 occupations.

The jobs in this group of occupations are more frequently held by males than females, although changes are happening. In the 1971 census, the 1,050 thousand workers found in these occupations were 16.4 per cent female. By 1986, of the then 1,764 thousand workers, 28.5 per cent were female. This change in sex composition has gone along with considerable growth at some levels within the group and little growth at others. Overall, the group grew from 14.1 to 15.7 per cent of employment between 1971 and 1986. But foremen, who formed 3.7 per cent of the employment in 1971, formed only 2.9 per cent in 1986. Supervisors also fell in proportion, from 6.0 to 5.0 per cent. The areas of growth were in middle management, from 2.8 per cent to 4.7, and high level management, 1.6 to 3.2 per cent. Thus the growth in management has been, to some extent, at the expense of direct supervision.

Table 11-4 shows what these changes have done to the age structure of this group of occupations. (See also Figure 11-1.) In the top panel the age distribution, in percentages, is given for men and women combined. The changes were relatively modest: a shift toward the younger cohorts between 1971 and 1981 (as there was for the labour force as a whole), and a movement back in the subsequent period. Much the same pattern is found for men, who in all three years formed by far the majority of workers in this group of occupations, and so dominate the pattern for the total. It is among women that a major shift is observed. The data for all three years indicate that women enter these occupations at younger ages than men – there are even rather large percentages to be found in the age range from 15 to 24. It appears that women are either promoted early or hired directly into supervisory and managerial posts more frequently than men. In 1971 women were relatively scarce in the age range from 30 to 44, possibly reflecting departures from the labour force during the years of family formation. (Women were found again in relatively large proportions in the age groups 50 years and older.) Between 1971 and 1981 a considerable change occurred in this pattern as large numbers of women in the age groups 25 to 29 through 35 to 39 began to appear. For example, while only 8.7 per cent of managerial or supervisory females were 25 to 29 in 1971, ten years later the proportion had increased to 15.4 per cent and it held at about that level through to 1986. Similar changes occurred for the 30 to 34 group. With the sharp increases in the proportions at younger ages came reductions in the proportions at older ages. (The numbers increased in the older age groups, of course, but by much less than in the younger ones.) In all, the shift in age distribution for women between 1971 and 1981 is large, perhaps the largest to be found at this high a level of aggregation in the census data that we are using. Evidence of this change could also be seen earlier, in Table 11-3, where mean ages for the females classified as high level or middle management are shown to fall some 6.8 years and 5.0 years, respectively, between 1971 and 1981. Supervisors also are younger, by 4.3 years in 1981; foremen change less, dropping 3.0 years. For males too the tendency is toward younger ages but it is much weaker: senior managers drop by just over two years and others by less. Figure 11-1 provides a detailed picture of the age patterns for the managerial and supervisory group as a whole.

One could argue that the pattern noted is one of reverse discrimination, and that the hurried promotion of women compensates for past injustice. If that is so, one might comment that the goal of equality appears to have been achieved among younger women somewhat at the expense of their elders. But another possibility is that the underlying process is a longstanding pattern of swift promotion of women or the hiring of them directly into supervisory and managerial roles. The 1971 data suggest this may be so. In that case relatively few women will enter this category in the future when it is the males, instead, who are promoted. Given this, quite the reverse conclusion could be drawn. During the period

when many women entered the labour force their presence among the managers and supervisors quickly increased. But this surge in the short run may be followed by stagnation in later periods as the failure to promote women has its effect. Thus those who might be heartened by the growth in the proportion female in this relatively high level socioeconomic group may find that the growth does not continue, that what seemed to be progress has become stalled. However, this latter possibility seems unlikely. Today's young women bring to the labour force a much greater element of continuing attachment and commitment than did those of earlier years, and their promotion and career prospects are likely to reflect that new reality – even if the adjustment takes longer than one would wish.

Shifts in the names of occupations and other changes that are more apparent than real could also influence the results we have presented, especially given the degree of aggregation and possible compositional shifts. As assurance against that possibility we consider an equivalent demonstration for a single, large occupational category – administrators unique to government. Those are the senior posts in the public sector that lack an immediate equivalent in the private sector, and so cannot be coded with them. Promotions and job descriptions within the public sector are subject to a variety of checks – within the service by colleagues and unions, outside the service by politicians, the general public and the press. It is unlikely that any gross redefinition of the meaning of the category has occurred and so changes in age structure for it can be interpreted with greater confidence. Figure 11-2 presents, again in pyramid form, the details of the age structure of this occupation. The same pattern in the ages of the females is apparent.

Professional, Semi-Professional and Technical Occupations

Four other categories in the PPM scheme can also be grouped to form a set sharing quite high social status. These are own account and employed professionals, semi-professionals and technicians. Combined, these categories contain 102 occupations, all judged to be of relatively high social status. Of occupations in the professions, five involve self-employment and 38 involve working for wages (or more appropriately, salaries); in semi-professions, there are 38 occupations, and among technicians, 21. Some 17.7 per cent of the employment (1,990 thousand workers) fell into this group in 1986, as compared to 14.6 per cent (1,083 thousand) in 1971. Growth was mainly in the semi-professional category (see Table 10-6), and somewhat greater for women than for men. Women are numerous in these occupations: the percentages female were 39.6 in 1971, 44.7 in 1981, and 48.8 in 1986.

These are occupations that appear to have spurned the baby boom. That is, this group of occupations aged moderately between 1971 and 1981 while the overall labour force became younger. As is shown in Table 11-3, males in the employed professionals category aged from 37.0 to 38.7 years, on average, and females from 35.0 to 36.5, while male employment as a whole dropped 1 year in mean age and female employment 1.2 years. We think of these occupations as having "administered age structures." Entrance to most of them is under some form of control, either through the administration of school places or the setting of formal requirements and explicit admission procedures. The absence of shifts in the mean ages, except for a gradual upward trend which reflects the ever-increasing requirements for entry, is one indication of this control. A second is the orderly nature of the age profiles of the occupations in the group, as shown in Table 11-5 and Figure 11-3. Collectively, the elements associated with entry control were strong enough to overwhelm,

at least in the short run, any tendency for the entry of the baby boom cohorts to lower the mean age.

That the age of entry into these occupations is relatively high is evidenced by the low proportions in the youngest age group. That it is perhaps also increasing is suggested by the declines in the proportions of both men and women in the two youngest groups and the increases in the middle ones. Physicians and surgeons show this pattern, together with certain other special features; we provide a detailed description for them, in the form of age pyramids, in Figure 11-4. Other occupations within the group show patterns of aging for different reasons. Teaching is a clear example. The ranks of the teaching occupations were increased in order to service the baby boom. Having some degree of tenure, many of the earlier recruits were retained throughout the period, even after the student populations had declined or stabilized, and relatively few new ones were hired. Table 11-6 shows the resulting pattern of ever-increasing mean age for elementary, secondary and university teachers over the fifteen years. Secondary school teachers show the pattern most clearly: their mean age increased by 3.7 years in the first ten-year period, and then by another 2.3 in the next five years. We show the details of the age structure of this occupation in Figure 11-5, again in the form of pyramids.

Farm Owner-Operators and Farm Labourers

The farm component of employment displays special features, as noted earlier. We provide in Table 11-7 a summary of the demographic characteristics of farm employment in 1971, 1981, and 1986. This information resembles that given for farming as an industry, but cuts rather more closely to the specialized nature of the farm sector by distinguishing between owner-operators and labourers. The total number of males falling into this set of occupations declined somewhat between 1971 and 1986, falling from 373 to 345 thousand. But within the category the relative proportions of farm owners and labourers changed rather sharply: 39.5 per cent were farm labourers in 1971, 46.0 per cent in 1986.

The most striking feature of farm owner-operators is their high mean age, some ten or more years greater than the overall average in all three census years. Also, in all three censuses large proportions were 55 years of age or older. That is to be expected for a declining sector, of course, and what is perhaps of interest is that there is little change in the mean age over the fifteen years, suggesting that the demographics of the farm owner-operator group may have stabilized. Balancing the age of owner-operators is the youth of farm labourers, who were some six to ten years younger than the average worker. If the two are combined, farm production workers as a group are seen to be less of a demographic anomaly than either component taken separately. Together their mean age more closely resembles that of the overall work force – around 41 years in each of the censuses, which is still above the mean for total employment but by only a few years. The mean age for the male farming group as a whole is also stable over the fifteen-year span.

The special age distributions of the owner-operators and labourers are evident in the high indexes of dissimilarity given in the final column of Table 11-7. The ID values are typically around 0.30 for both groups, although somewhat higher for the labourers in 1971. Again, combining the two components into a single category brings them more into line with other employment. The ID's that compare the total in farming occupations with overall employment are as follows: 1971, 0.20; 1981, 0.19; and 1986, 0.22.

The lower part of Table 11-7 shows the demographic characteristics of women in farming. The numbers involved are much smaller than those for men, and female owner-operators are particularly scarce. There is a surge in the number of owner-operators between 1971 and 1981 accompanied by a fall in mean age of some 5 years, a reduction in the percentage 55 or older from 0.40 to 0.26, and a shift in the index of dissimilarity from 0.40 to 0.30. As noted earlier, these changes probably reflect in large measure the definitional changes adopted by Statistics Canada, beginning with the 1981 Census. From 1981 to 1986 the numbers involved and the age characteristics were much more stable. (Ghorayshi, 1989, provides some recent discussion.)

Female farm labourers are considerably more numerous than female owner-operators. They are generally older than their male counterparts and less distinctive in age structure, as shown by IDs in the 0.10 to 0.20 range, less than half the values of those for male labourers. Again the question of what definitions are in place and how they may have varied seems crucial.

Clerical, Sales and Service Occupations

The PPM coding system provides three categories of clerical, sales and service occupations, differing in degree of skill. These jobs, ranging from middle to low social status, include much of the female labour force: about half of all employed female workers were in clerical, sales or service occupations in the 1986 census. Women have in fact almost a monopoly on that kind of work. In 1986 only 28 per cent of workers in those occupations were male, down from 35 per cent in 1971. Understanding of recent changes in the position of women in the labour force requires careful consideration of the occupations that fall into the set. The upper part of Table 11-8 gives summary demographic characteristics for women in clerical, sales or service occupations. In all there are 62 occupations falling into this set – 17 skilled, 30 semi-skilled and 15 unskilled.

The table shows that this was an area of high growth, overall, between 1971 and 1981. The increases at the skilled and semi-skilled levels were 92 and 69 per cent, respectively, over the ten-year span, while female employment as a whole grew by 59 per cent. Only at the unskilled level was growth slower than the average, at 40 per cent. One is again reminded of Oppenheimer's (1970) argument that the flow of females into the labour force was demand-driven when large numbers of jobs opened up in the economy that were seen as providing work appropriate for women. Between 1981 and 1986 aggregate employment growth slackened markedly. Female employment continued to grow, but at a diminished pace, increasing by only 11 per cent. The numbers of skilled and semi-skilled jobs grew even more slowly (8 and 5 per cent, respectively), while the number of unskilled jobs grew by 14 per cent. These shifts in growth rates are reflected in the overall proportion of female employment in the group: in 1986 the group accounted for some 50 per cent of all working women as compared to only 48.7 per cent in 1971 and a peak of 52.5 in 1981.

Fast growing occupations might be expected to experience reductions in mean age, but for many jobs in this group the mean was already low at the beginning of the period. Women in skilled and semi-skilled clerical, sales and service occupations had an average age of only 34.1 in 1971, less than the 36.1 average for all female workers at that time (and much less than the 38.1 for males). Again the unskilled were different – above the average for the group and also for female employment as a whole in 1971, having a mean age of 36.6

years. It is at the unskilled level that many older women are finding work, while younger ones are found more frequently at the skilled and semi-skilled levels. This is the reverse of the pattern that would be found if women were being promoted up through the skill levels. It probably reflects the higher levels of education among the more recent cohorts of female labour force entrants.

While there is no perfectly typical example for any set of occupations, the job of library or file clerk is perhaps a good one for this set. Classified at the semi-skilled level, this type of job is quite near the mean in age and has a relatively low index of dissimilarity. See Figure 11-6.

Growth of male employment in the clerical-sales-service group was somewhat above average. It increased by 26 per cent from 1971 to 1981, while male employment increased overall by 24 per cent, and by 5 per cent from 1981 to 1986, while overall male employment was unchanged. For both men and women, the growth was most rapid at the skilled end in the first period and at the unskilled end in the second. The lower panels of Table 11-8 show this. One may even note two instances where the number of male workers actually decreased between two censuses: unskilled males between 1971 and 1981 and skilled males between 1981 and 1986. As a result of those differences in rates of growth, women have become relatively more numerous in this set of occupations, and that is true at all three skill levels. With the exception of a reversal between 1981 and 1986 at the semi-skilled level, the female percentages have increased consistently since 1971. Women are particularly numerous at the skilled level, where they accounted for 76.9 per cent of the total in 1986.

Large numbers of women entered the labour force during the period 1971 to 1986. Despite that, the average age of workers remained consistently lower for women than for men by about two years. (See Table 11-3.) Within the clerical, sales and service group, both the women and the men were roughly another two years younger than the overall means for their sexes in 1971. After 1971 there were modest trends in opposing directions: the difference in age between the clerical-sales-service group and the total declined for females, while for males it increased. Thus while males in the group were on average some two years older than females in 1971, by 1986 they were less than one year older.

Unlike women, men holding occupations rated as skilled tended to be older than those at the semi- and unskilled levels. That suggests the possibility of promotional sequences being more frequent for men than for women. However, by the later censuses this sex difference had diminished; the male-female difference in age at the skilled level fell from 4.4 to 2.7 years. Inspection of the individual occupations within the group suggests considerable complexity. Men and women hold different jobs within the skilled category: women are predominantly in secretarial work; men are found in the skilled sales occupations, such as business service sales or advertising sales. Judging from 1986 data it takes considerable seniority for the men to reach those jobs. (The mean age of men in business service sales was 39.8 in 1986, for example.) For women the age of entry is younger: the mean age for female secretaries/stenographers was 35.8. One exception to this pattern in 1986 was real estate sales, in which both men and women are found to be relatively old (mean age 43.8 for males, 41.9 for females). However, in another case, that of insurance sales, women had become quite numerous by 1986 but remained much younger than the males (average age 33.9 compared to 41.3 for males).

Many of the demographic differences between males and females within this set of occupations may derive from the fact that they have different occupations within the group. One of the few occupations in the group with considerable numbers of both males and females is that of "sales persons, commodities." Figure 11-7 presents the demographic structure of this occupation. While the structure for males scarcely changed, for women the earlier tendency toward bimodality almost completely disappeared.

Crafts and Trades

Half of employed women work in clerical, sales and service jobs; half of employed men work in crafts and the trades, often called "blue collar" jobs. These are the manual occupations that form the backbone of a commodities-oriented industrial society – jobs in the factories, in various kinds of repair, construction, extraction of resources, fishing, transportation and so on. The census makes many distinctions in this area: some 234 separate occupations are identified, almost half the total. The PPM code groups these, in turn, into three sets differentiated by level of skill, just as was done for the clerical, sales and service jobs: skilled, semi-skilled and unskilled. The skilled set (70 occupations) includes such familiar trades as carpenter and such arcane skills as chemical strainers. The semi-skilled set (98 occupations) includes sewing machine operators and pelt processors. Among the unskilled (66 occupations) are fish canners and grade tampers. The proportions falling into each of these groups were given earlier, in Table 10-2. All have diminished relative to overall employment since 1971: the skilled from 10.8 to 9.5 per cent of the total, the semi-skilled from 9.8 to 9.3, and the unskilled from 13.2 to 12.1. Even so, a large number of workers are involved – more than 3.5 million in 1986. It is very much a man's world, especially at the skilled level. Only one in five of the workers in the group as a whole were female; among the skilled only 7.4 per cent were female.

Women who work in these jobs tend to be older than average: as shown in Table 11-3, the mean age at each skill level was above the average for all females in each census year. Males, on the other hand, were (without exception) younger than the male average. Among males, the mean ages were highest for the skilled; among females the skilled were always the youngest. Thus not only are there relatively few women in this category, they also have rather special demographic characteristics.

This large component of the male labour force could not have escaped the effects of the entry of the baby boom cohorts, and indeed it appears to have borne the brunt of those effects. The drop in mean age of one year for all male workers between 1971 and 1981 became a drop of nearly two years for the male crafts and trades workers. The recovery between 1981 and 1986 of some 0.3 years, overall, was also magnified, at 0.6 years for those workers. For men at least, then, this category includes a substantial number of entry level occupations. That is the other side of the promotion pattern described earlier. Men achieve higher status supervisory or managerial work only later in their careers. (Involved in all of this is one other consideration: some young men who will eventually belong to higher status groups are still in school. Were they somehow included in the computations, the mean ages for the higher status categories would not be so great, nor would the discrepancy in ages between them and the crafts and trades workers. The same effect should be found for women, of course; thus the absence of an age/status relationship among them is even more remarkable.)

While there is demographic diversity within this set of occupations the structure of the set as a whole can be offered as a sort of "modal" crafts and trades occupation. Details are given in a pyramid analysis, presented as Figure 11-8.

Pressures exist which keep these occupations from developing the highly skewed age distributions found, for example, among teachers. Except for union protection these jobs are not given tenure, and so some continuous mobility serves to iron out differences in age structure. Mean indexes of dissimilarity for crafts and trades occupations (shown in Table 11-9) are lower than for total employment in the case of men, and the same as the total in the case of women. (Compare the indexes in Table 11-9 with those in Table 11-1.) Still there is some differentiation. In Table 11-10 we single out 25 occupations from the 1986 male crafts and trades set that had IDs that round to 0.20 or greater. Occupations with fewer than 1500 cases in either 1971 or 1986 have been omitted, although we have bent this rule on three occasions, finding it hard to enforce for occupations that have grown quickly (e.g., sound and video recording operators), have suffered recent decline (e.g., watch and clock repairers), or those just on the margin (e.g., labouring, etc.: printing and related). We have endeavoured also to classify these 25 demographically anomalous occupations into groups that would suggest possible reasons for the differentiation.

The first group includes occupations that are assumed to have developed special age profiles because of declining demand for the skill (or more basically, for the industrial activity with which it is associated). One would expect such occupations to have an aging constituency, and in the main they do, with mean ages exceeding 40 years. While bus driving actually showed some growth between 1971 and 1986, the other occupations in the group had declined, ending with fewer workers in 1986 than fifteen years earlier. Occupations in this category are predominantly skilled (a skill level code of 10) or semi-skilled (code 13).

The opposite to declining sectors are newer, growing sectors. Sound and video recording operators and electronic assembly are of this type, with growth rates that led them to more than double in size between 1971 and 1986. Growth was moderate for rubber and plastic moulders, which showed a young age distribution (although growth for the rubber and plastics product industries was high – see Table 6-3). Several other occupations in plastics, which fell below the 1500 size limit and so are not shown, also display youthful age distributions.

Many occupations with very young age distributions are of a casual type. One thinks of them as being held part-time by high school students, although seasonal work and temporary employment are also included. The third category contains eight occupations that we assume to be of this type, and in general the mean age (or proportion under 35) shows the expected pattern. These occupations are exclusively unskilled (skill level 15). Service station attendants provide the classic example, with 91 per cent of the male workers in 1986 less than 35 years of age.

Entry level occupations form the fourth group, although the line between entry level work and casual employment must at times be blurred. The occupations identified by the census as "labouring" or, in Statistics Canada's poetic phrase, "other elemental work," appear often to be entry level jobs, and so low mean ages are to be expected and are found for this set. These are predominantly, but not entirely, unskilled. Casual employment or entry level jobs form the largest categories, both in number of occupations and number of workers.

These factors, then, seem to be the major ones behind the unusual age distributions among the crafts and trades occupations, at least during a period of youthfulness in the labour force.

We also allowed space for a category of jobs that require youth because they are physically demanding. The most prominent candidate for this category was rotary well drilling. (In practice, the youthfulness of workers in this occupation could stem from the fact that it is an occupation commonly found in geographically remote resource extractive areas and may require a migratory labour force.) Finally we note two occupations – non-commissioned armed forces males and policemen and detectives – that show an absence of workers over 55. Enroling for a limited term or a practice of early retirement would explain this pattern, and so a category named "early retirement" is offered.

Bus drivers are, as noted, actually misplaced, since it is not a declining occupation. We considered creating a category of "quasi-tenured" for occupations which, through strong unionization or some other departure from "normal" market situations, have the functional equivalence of tenure. Bus driving may be an example of this; clearer examples, such as school teaching, can be found at other levels of the status hierarchy.

CONCLUSIONS

We divided the occupational world into five major sectors: managerial and supervisory; professional, semi-professional and technical; farming; clerical, sales and service; and crafts and trades. Differences in age distributions are found both within and between these sets of occupations. However, in general, we find that the differences are rarely extreme. We have singled out some examples for detailed examination because they are either typical or exceptional. Much more detail exists in the data and further analysis is possible and may be desirable. Amid all this, however, is the danger of over-interpreting patterns that may in fact reflect short-term fluctuations rather than enduring properties.

APPENDIX TO CHAPTER 11: A NOTE ON SPARSE OCCUPATIONS

A recurrent problem in using the occupational data is the fact that at least in some years certain occupations have very few workers. The problem is less acute for the industry data since there are not as many categories (264 compared to 484, excluding the "not stated" ones). But for occupations there are also categories that include no women, and those must be excluded from certain calculations to obtain meaningful results. More generally, we were concerned about the reliability of inferences based on relatively sparsely populated categories. A threshold of 1500 seemed appropriate to us, although of course the choice is arbitrary. (With a 1 in 5 sampling ratio in each census, 1500 workers would actually be represented by only some 300 cases.) While for some of our analysis the number of occupations falling into the small, problematic categories is comparatively large, their proportion of total employment is small. Table 11-A1 gives some indication of what is involved. The table shows that it is only among women, and then mostly in 1971, that the problem of totally vacant occupations occurs. Those occupations have had to be omitted on several occasions to avoid nonsensical calculations.

The incidence of occupations with fewer than 1500 is not trivial. Even when total employment is being considered each census has more than 50 such occupations. However, the number of workers involved is less than 1 per cent of the total in all three years. For men, taken separately, about 100 occupations are involved, but the total number of workers is never over 100 thousand and never as great as 2 per cent of all male workers. The problem is more acute for female workers. A majority of occupations had fewer than 1500 women in them in each of the three censuses. The total number was roughly 130 thousand in each census, and represented as much as 4.6 per cent of all female employment in 1971. We have, therefore, permitted ourselves to comment on relatively sparsely populated occupations in some instances, especially when dealing with female employment. Particularly for women, where the occupations may represent new points of entry into traditionally male parts of the work world, too rigid an observation of the 1500 cut-off might have resulted in missing some points of importance.

Figure 11-1: Employment Age Pyramids, 1971, 1981, and 1986 -- Managerial and Supervisory Occupations

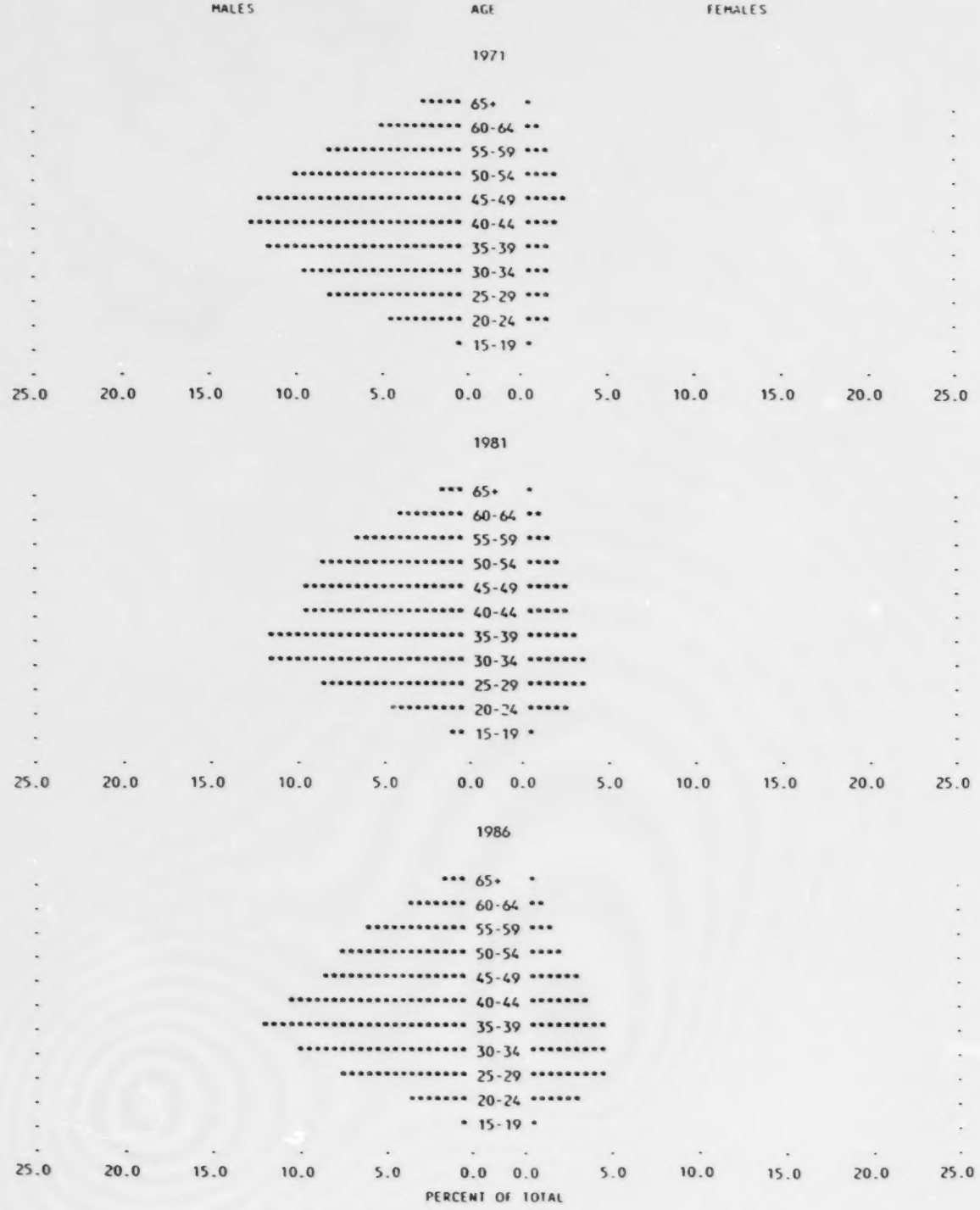


Figure 11-2: Employment Age Pyramids, 1971, 1981, and 1986 -- Administrators Unique to Government

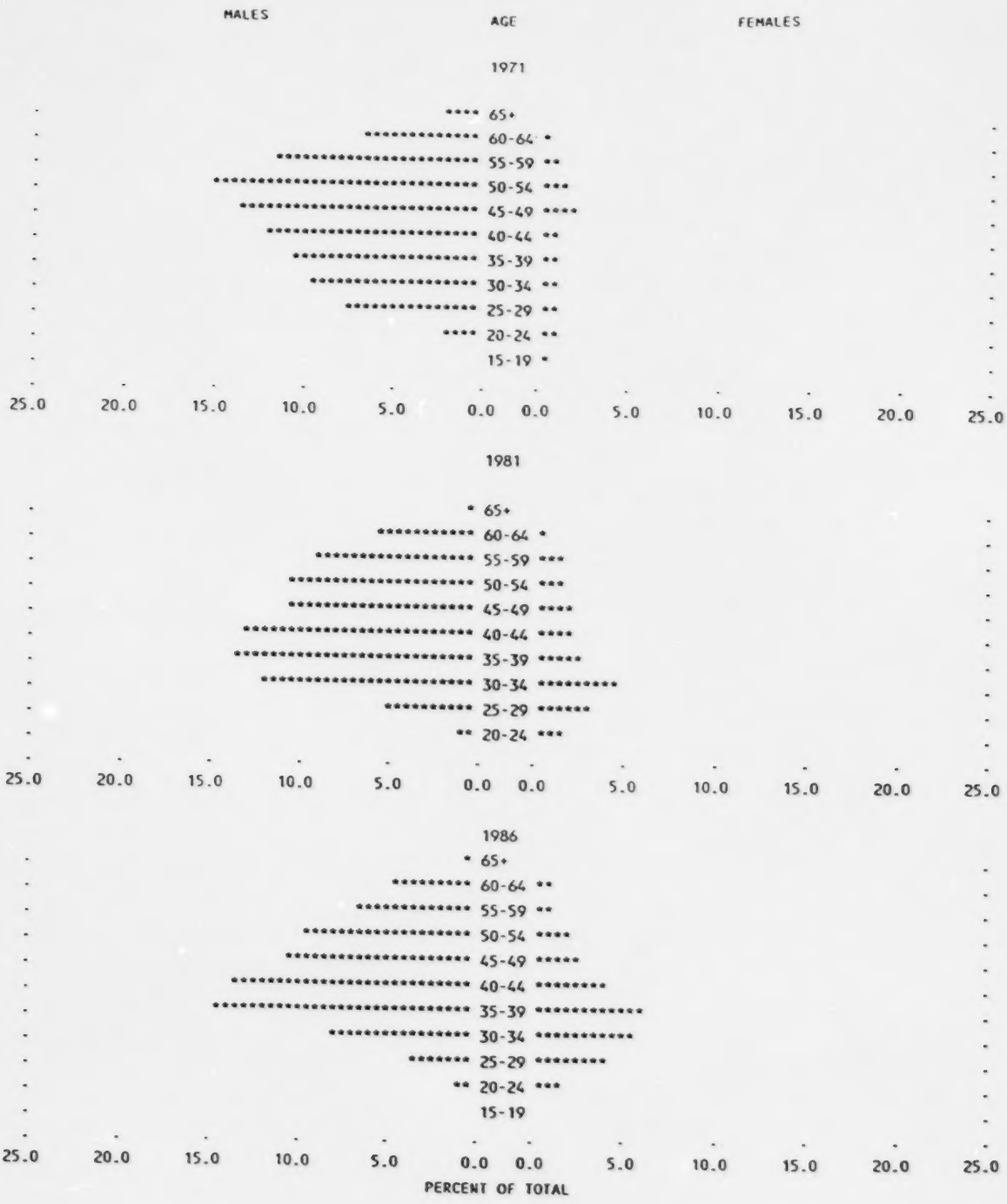


Figure 11-3: Employment Age Pyramids, 1971, 1981, and 1986 -- Professional, Semi-Professional, and Technical Occupations

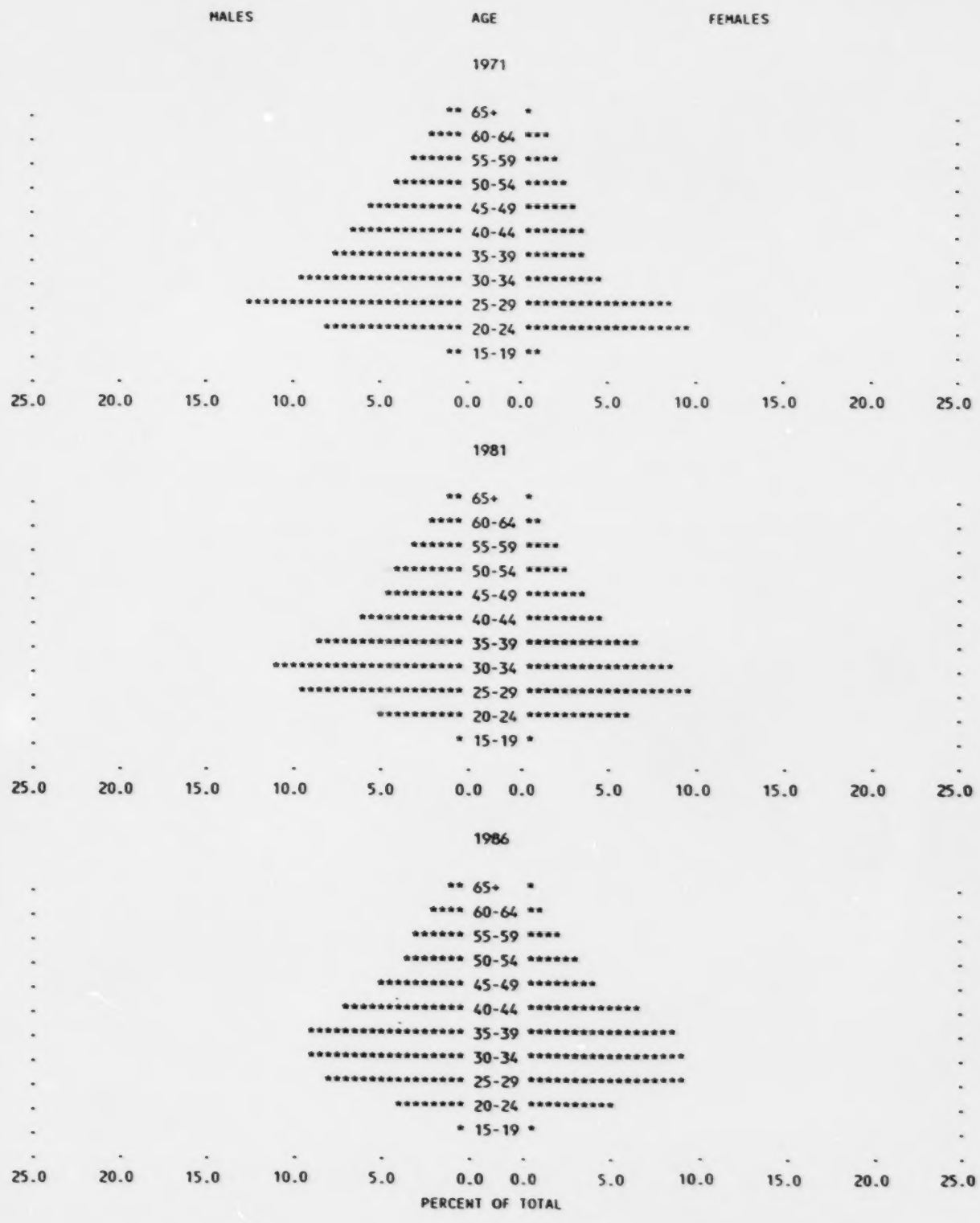


Figure 11-4: Employment Age Pyramids, 1971, 1981, and 1986 -- Physicians and Surgeons

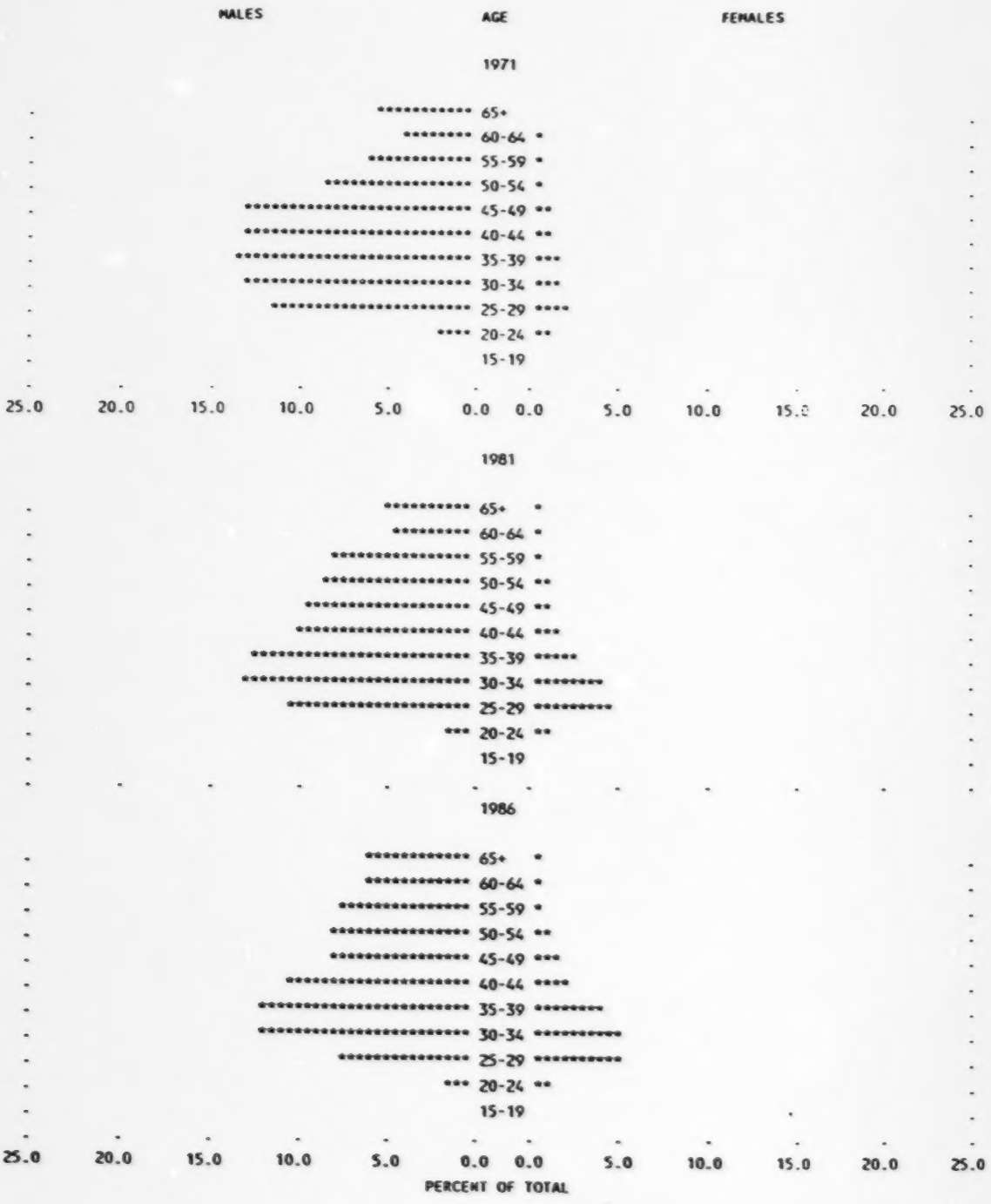


Figure 11-5: Employment Age Pyramids, 1971, 1981, and 1986 -- Secondary School Teachers

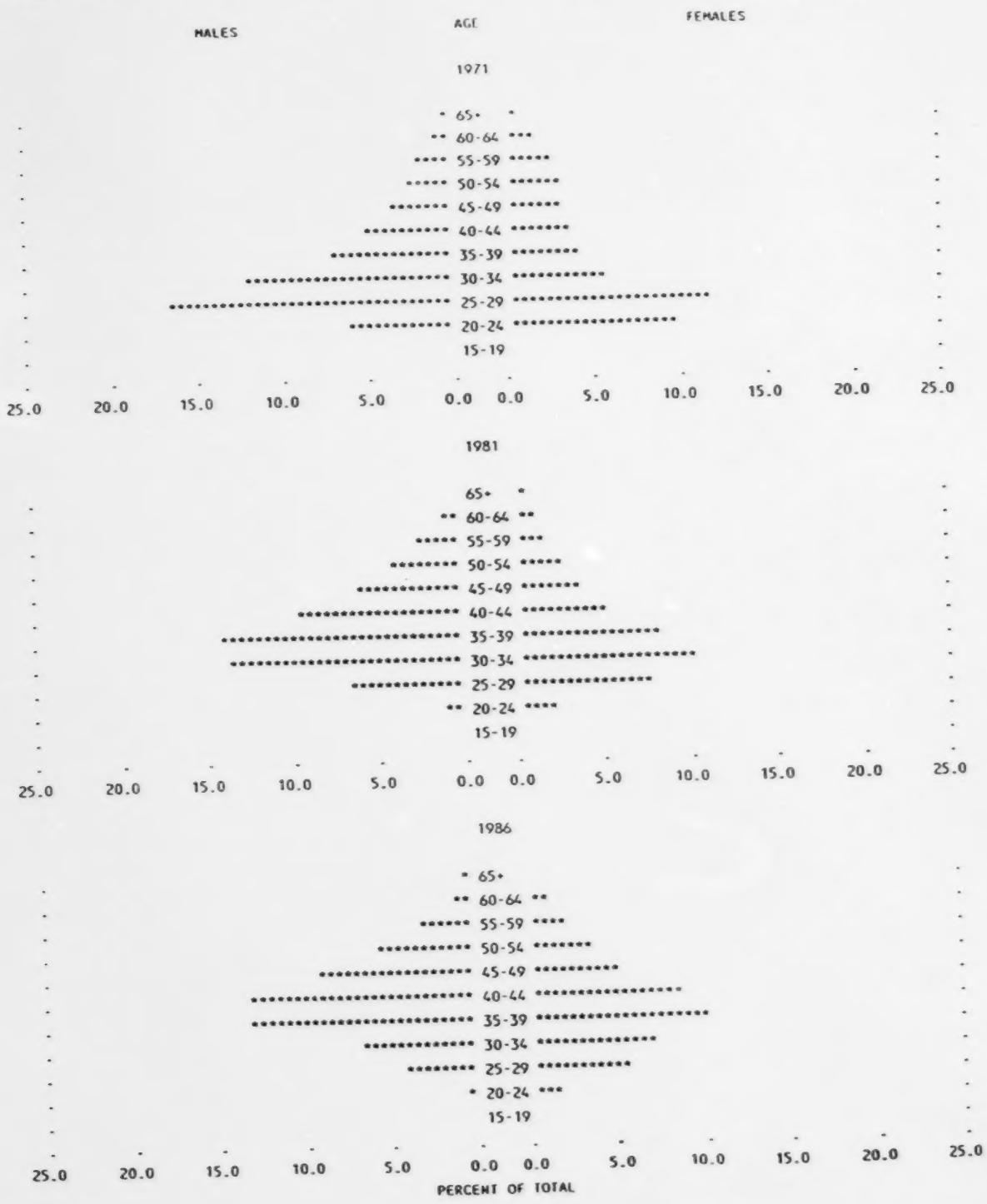


Figure 11-6: Employment Age Pyramids, 1971, 1981, and 1986 -- Library and File Clerks

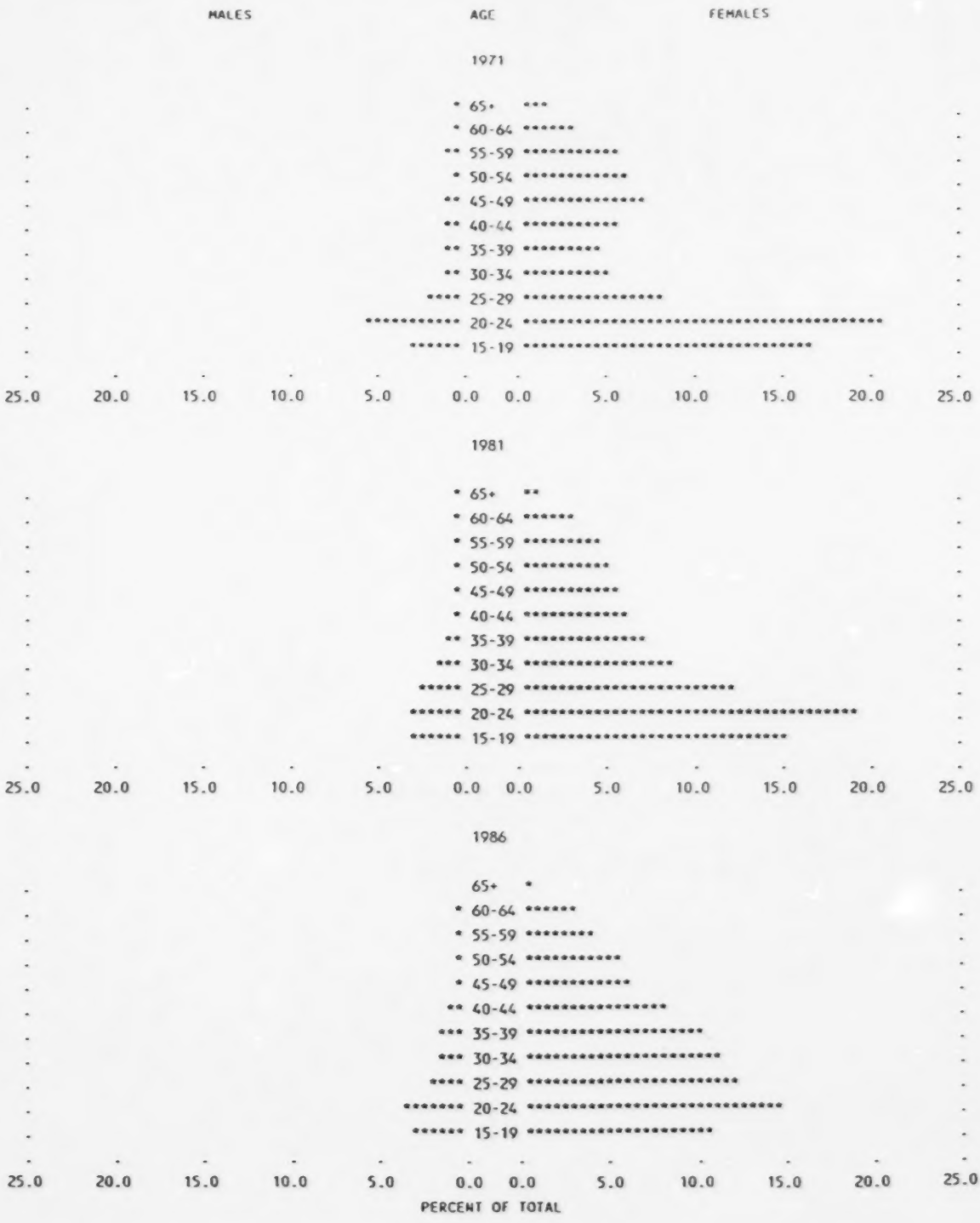


Figure 11-7: Employment Age Pyramids, 1971, 1981, and 1986 -- Sales Clerks, Commodities

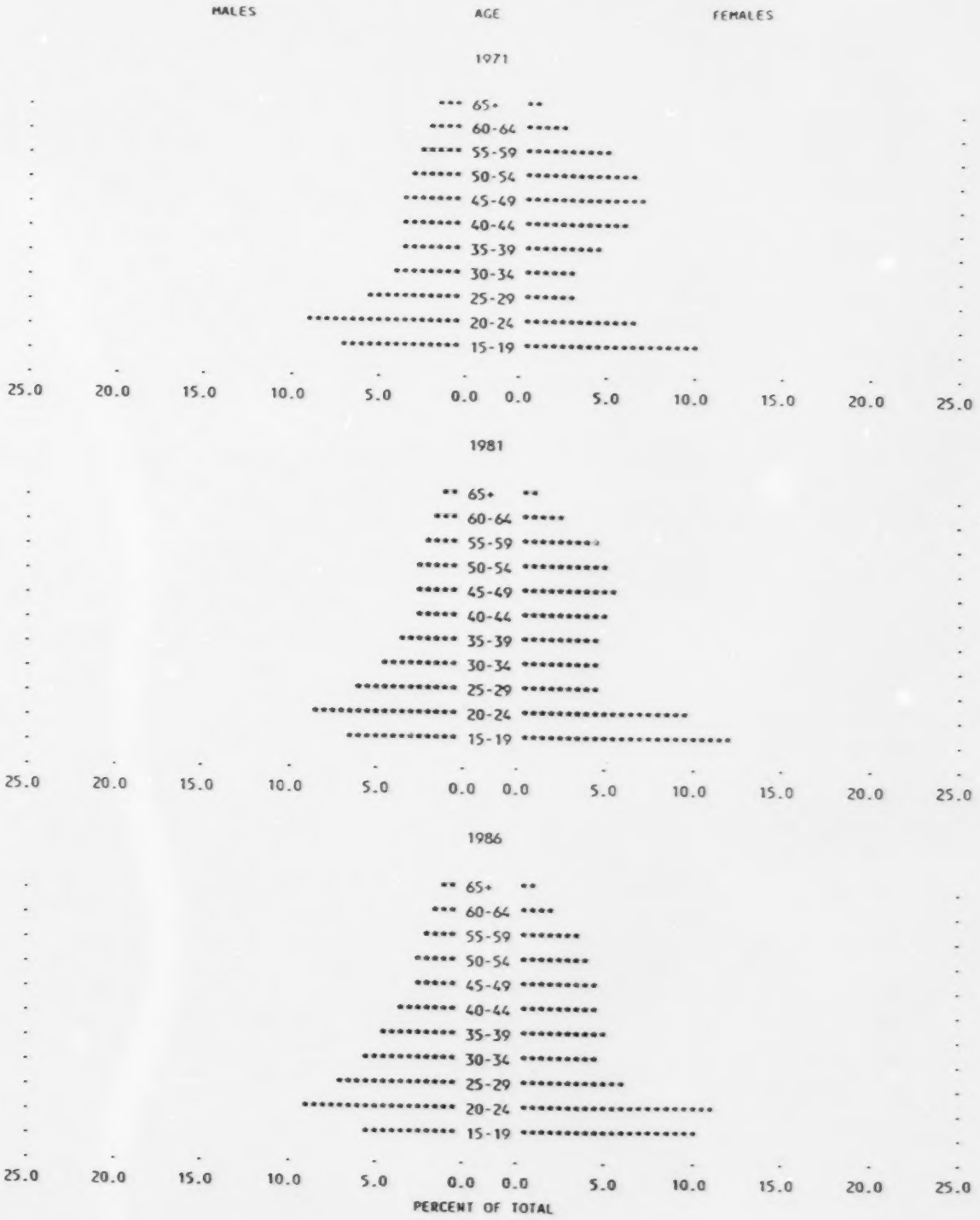


Figure 11-8: Employment Age Pyramids, 1971, 1981, and 1986 -- Crafts and Trades

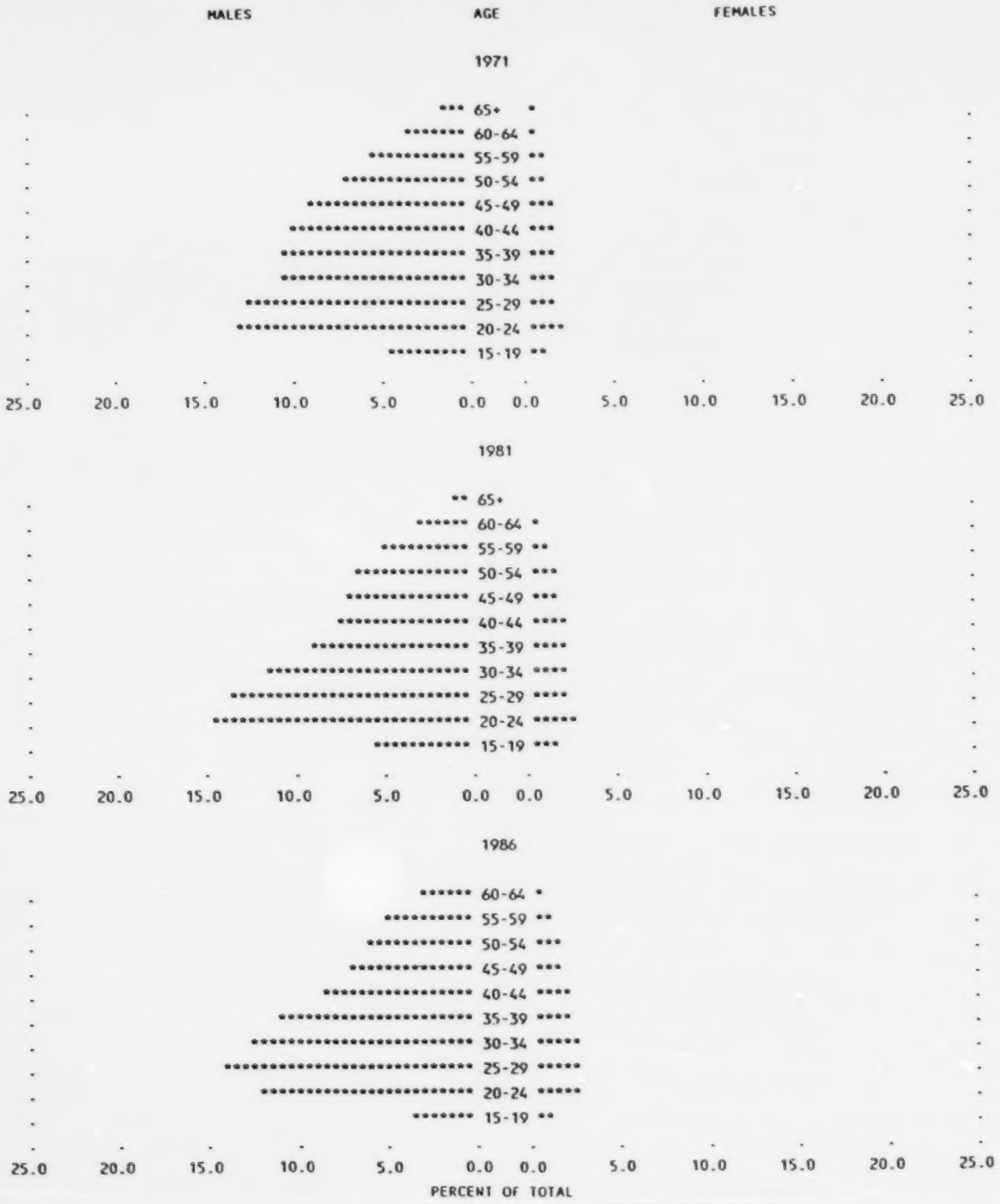


Table 11-1: Measures of Age Differentiation in Industries and Occupations, 1971, 1981, and 1986

	Males			Females		
	1971	1981	1986	1971	1981	1986
Industries						
Mean ID	0.12	0.12	0.13	0.14	0.13	0.14
Eta Coefficient	0.18	0.22	0.25	0.22	0.24	0.24
PPM Occupations						
Mean ID	0.14	0.15	0.14	0.14	0.14	0.13
Eta Coefficient	0.25	0.25	0.26	0.20	0.19	0.18
Detailed SOC Occupations						
Mean ID	0.17	0.17	0.17	0.16	0.16	0.15
Eta Coefficient	0.34	0.33	0.35	0.28	0.27	0.28

Note: The mean IDs are weighted averages of individual indexes of dissimilarity. The "not stated" occupation and "unspecified or undefined" industry categories are excluded in the calculations.

Table 11-2: The Fifteen Oldest and Youngest Occupations (Based on 1986 Mean Ages), 1971, 1981, and 1986

	Employment			Mean Age		
	1971	1981	1986	1971	1981	1986
Fifteen oldest occupations						
Nuns, brothers, nor	1,860	5,925	2,270	55.6	55.3	62.9
Farmers	233,115	225,265	205,445	48.2	47.7	48.9
Ministers of religion	18,550	21,850	22,925	47.0	47.6	47.2
Watch, clock repairers	2,440	2,030	1,500	44.8	42.5	46.1
Religion, nec	2,940	4,145	5,220	48.6	46.8	45.9
General managers, other senior officials	41,145	49,360	86,380	47.5	46.1	45.8
Foremen: pulp, papermaking, related	3,730	5,375	5,875	46.1	45.5	45.7
Postmasters	5,655	5,745	5,555	48.4	46.8	44.5
Supervisors: lodging, other accommodation	15,575	25,580	34,120	46.6	45.8	44.2
Administrators, teaching, related	28,730	34,835	38,650	41.9	43.0	44.2
Foremen: stationery engine, related	6,980	7,790	7,260	45.0	44.4	44.0
Supervisors: apparel, furnishings service	5,210	4,190	4,325	45.0	43.7	43.8
University teachers	22,730	31,605	33,740	38.2	42.0	43.4
Real estate sales	21,440	55,310	63,000	45.4	42.4	43.1
Foremen: railway transport operating	5,315	5,585	4,920	46.5	43.8	43.0
Fifteen youngest occupations						
Labouring, etc: printing, related	1,525	3,520	3,370	29.4	30.3	30.9
Rotary well-drilling, related	2,380	6,650	4,805	30.1	27.1	30.9
Bartenders	11,915	29,020	35,300	39.3	31.9	30.6
Sleeping-car, baggage porters	3,000	2,650	2,475	36.3	31.2	30.5
Other ranks, armed forces	67,615	52,580	59,065	30.7	30.0	30.3
Coaches, trainers, instructors, sports etc	8,025	15,660	20,765	31.0	28.6	29.2
Labouring, etc: forestry, logging	7,090	8,300	11,710	30.5	28.4	29.1
Cashiers, tellers	104,530	221,250	254,285	30.5	28.6	29.0
Protective service, nec	5,520	11,335	13,395	32.3	29.1	28.8
Labouring, etc: other services	44,040	71,300	72,145	33.9	28.9	28.2
Guides	2,460	3,990	5,740	32.5	30.0	27.8
Food, beverage serving	112,280	196,055	210,545	30.9	27.7	27.3
Attendants, sports, recreation	3,275	7,595	7,720	31.8	28.3	27.0
Newspaper carriers, vendors	7,240	5,955	8,065	18.7	23.2	23.0
Service station attendants	27,605	29,945	32,050	25.2	22.7	22.9

Note: Occupations with fewer than 1,500 workers in any of the three census years are excluded.

Table 11-3: Mean Ages, 1971, 1981, and 1986 -- PPM Occupational Groups

	Males			Females		
	1971	1981	1986	1971	1981	1986
Self-employed professionals	42.0	41.0	42.3	37.0	34.3	34.6
Employed professionals	37.0	38.7	40.0	35.0	36.5	37.4
High-level management	44.6	42.2	43.1	45.4	38.6	38.7
Semi-professionals	35.4	35.7	36.3	35.9	35.5	36.4
Technicians	34.8	34.9	35.8	30.4	30.7	32.2
Middle management	42.8	41.2	41.1	41.4	36.4	36.8
Supervisors	42.5	40.7	40.7	43.4	39.1	38.8
Foremen	42.6	41.3	41.5	42.1	39.1	38.9
Skilled clerical-sales-service	38.1	38.1	38.7	33.7	34.2	35.9
Skilled crafts and trades	38.0	36.1	37.1	37.5	35.0	35.8
Farmers	48.1	47.9	49.0	50.6	45.1	47.4
Semi-skilled clerical-sales-service	35.4	33.2	33.0	33.6	32.0	32.3
Semi-skilled crafts and trades	36.5	35.0	35.5	37.8	36.4	37.0
Unskilled clerical-sales-service	35.9	35.4	34.8	36.6	35.5	35.5
Unskilled labourers	36.8	34.8	35.0	38.2	36.5	36.9
Farm labourers	29.0	30.8	31.7	40.4	36.0	38.4
All Occupations	38.2	37.2	37.5	36.1	34.9	35.6

Table 11-4: Age Distributions, 1971, 1981, and 1986 -- Managerial and Supervisory Occupations

	Total ('000s)	Percentage Distribution											
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Both Sexes													
1971	1,050	1.1	5.8	9.5	11.1	13.1	14.1	14.3	11.9	9.7	6.0	2.0	1.2
1981	1,612	1.4	7.1	12.2	15.3	14.4	12.4	11.6	10.6	8.2	4.7	1.3	0.7
1986	1,764	1.1	6.4	11.8	14.8	16.4	14.3	11.4	9.7	7.8	4.4	1.2	0.7
Males													
1971	878	0.8	5.2	9.6	11.5	13.6	14.9	14.2	11.8	9.5	5.9	1.9	1.1
1981	1,229	1.0	5.8	11.2	15.3	14.8	12.7	12.2	11.2	8.6	5.0	1.4	0.7
1986	1,262	0.8	5.0	10.5	14.2	16.4	14.9	12.0	10.6	8.6	4.8	1.4	0.8
Females													
1971	172	2.6	8.6	8.7	8.7	10.4	12.6	14.8	12.7	10.6	6.3	2.4	1.7
1981	383	2.6	11.4	15.4	15.5	13.1	11.2	9.9	8.8	6.8	3.7	1.0	0.7
1986	502	1.9	9.8	15.1	16.2	16.2	12.8	9.8	7.6	5.7	3.4	0.9	0.5

Table 11-5: Age Distributions, 1971, 1981, and 1986 -- Professional, Semi-Professional, and Technical Occupations

	Total	Percentage Distribution											
	('000s)	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Both Sexes													
1971	1,083	1.7	17.6	20.6	14.0	11.0	9.8	8.5	6.5	5.1	3.3	1.2	0.7
1981	1,749	1.3	11.2	19.1	19.6	14.9	10.2	7.9	6.5	4.9	2.9	0.9	0.6
1986	1,990	0.9	9.1	16.8	17.8	17.8	13.3	8.9	6.5	4.7	2.8	0.9	0.6
Males													
1971	654	1.5	13.6	20.4	15.4	12.3	10.7	9.3	6.6	4.9	3.2	1.2	0.8
1981	968	1.1	9.2	17.5	20.0	15.5	10.6	8.3	6.9	5.7	3.3	1.1	0.7
1986	1,020	0.8	7.6	15.4	17.3	18.0	13.4	9.3	7.2	5.4	3.6	1.2	0.8
Females													
1971	429	2.0	23.7	20.9	11.7	9.1	8.3	7.4	6.3	5.4	3.3	1.1	0.6
1981	781	1.5	13.6	21.1	19.2	14.2	9.8	7.3	5.9	4.0	2.4	0.6	0.4
1986	971	1.0	10.7	18.2	18.2	17.6	13.2	8.4	5.8	4.0	2.1	0.5	0.4

Table 11-6: Mean Ages of Teachers, 1971, 1981, and 1986

				Change	
	1971	1981	1986	1971-81	1981-86
Elementary School	33.4	36.4	38.3	3.1	1.8
Secondary School	34.6	38.2	40.5	3.7	2.3
University	38.2	42.0	43.4	3.8	1.5

Table 11-7: Demographic Characteristics of Farming Occupations, 1971, 1981, and 1986

	Employment ('000s)	Mean Age	%<35	%35-54	%55+	Index of Dissimilarity
1971			-- Males --			
All Occupations	5,336	38.1	45.0	39.8	15.3	0.00
Farmers	225	48.1	17.3	49.1	33.6	0.30
Farm Labourers	147	29.0	72.0	15.6	12.4	0.43
1981						
All Occupations	6,614	37.2	49.2	37.1	13.7	0.00
Farmers	206	47.9	22.4	41.7	35.9	0.30
Farm Labourers	139	30.8	69.8	17.2	12.9	0.34
1986						
All Occupations	6,647	37.5	46.7	40.2	13.2	0.00
Farmers	186	49.0	20.9	39.4	39.7	0.32
Farm Labourers	159	31.7	68.5	18.3	13.2	0.32
1971			-- Females --			
All Occupations	2,782	36.1	51.0	36.0	13.0	0.00
Farmers	8	50.6	13.2	46.6	40.3	0.40
Farm Labourers	96	40.4	33.0	50.8	16.2	0.19
1981						
All Occupations	4,426	34.9	55.6	34.4	10.1	0.00
Farmers	19	45.0	25.6	48.8	25.7	0.30
Farm Labourers	74	36.0	49.1	39.3	11.7	0.11
1986						
All Occupations	4,923	35.5	52.0	38.7	9.2	0.00
Farmers	19	47.4	20.0	47.5	32.5	0.34
Farm Labourers	88	38.4	43.3	40.4	16.3	0.16

Table 11-8: Demographic Characteristics of Clerical, Sales and Service (CSS) Occupations, 1971, 1981, and 1986

	Employment ('000s)	Mean Age	%<35	%35-54	%55+	Index of Dissimilarity
1971		-- Males --				
All CSS Occupations	734	36.3	52.5	32.9	14.6	0.00
Skilled	202	38.1	47.5	37.6	14.9	0.08
Semi-skilled	390	35.4	54.7	31.6	13.7	0.12
Unskilled	142	35.9	53.8	29.9	16.3	0.15
1981						
All CSS Occupations	927	35.1	57.4	29.7	12.9	0.00
Skilled	291	38.1	48.5	36.7	14.8	0.07
Semi-skilled	502	33.2	62.6	26.3	11.1	0.17
Unskilled	133	35.4	57.4	26.9	15.8	0.12
1986						
All CSS Occupations	975	34.8	56.6	32.1	11.3	0.00
Skilled	267	38.6	44.5	40.9	14.7	0.06
Semi-skilled	557	33.0	62.4	28.2	9.4	0.19
Unskilled	151	34.8	56.4	31.1	12.5	0.12
1971		-- Females --				
All CSS Occupations	1,355	34.1	56.4	33.3	10.3	0.00
Skilled	428	33.7	59.2	32.5	8.4	0.13
Semi-skilled	694	33.6	57.3	33.0	9.7	0.12
Unskilled	233	36.6	48.9	35.4	15.7	0.09
1981						
All CSS Occupations	2,322	33.3	60.6	30.6	8.8	0.00
Skilled	823	34.2	58.7	33.3	8.0	0.10
Semi-skilled	1,173	32.0	63.7	28.0	8.3	0.18
Unskilled	326	35.5	54.1	33.2	12.7	0.06
1986						
All CSS Occupations	2,489	34.0	57.3	34.3	8.4	0.00
Skilled	888	35.9	51.5	39.9	8.5	0.07
Semi-skilled	1,230	32.3	62.7	29.9	7.4	0.20
Unskilled	372	35.5	53.4	35.5	11.1	0.05

Table 11-9: Measures of Age Differentiation in Crafts and Trades Occupations, 1971, 1981, and 1986

	Males			Females		
	1971	1981	1986	1971	1981	1986
Employment ('000s)	2,318	2,944	2,859	424	693	709
Mean Age	37.1	35.3	35.9	38.0	36.3	36.8
Mean ID	0.15	0.14	0.14	0.16	0.16	0.15

Note: The mean IDs are weighted averages of individual indexes of dissimilarity.

Table 11-10: Crafts and Trades Occupations with Special Age Structures -- Males, 1986

	SOC Code (1971)	Employment	Mean Age	%<35	%35-54	%55+	ID	PPH Skill Code
Declining or Stable Occupations								
Tailors and dressmakers	8553	4,350	46.1	19.8	53.2	26.9	0.30	10
Watch, clock repairers								
Locomotive engineers & firemen	9131	6,580	42.3	35.1	41.3	23.8	0.22	10
Bus drivers	9171	37,355	43.0	27.8	51.6	20.5	0.21	13
Growing/Recent Occupations								
Sound recording & reproduction eqpt. operators	9555	1,565	32.3	63.9	33.2	1.9	0.26	10
Bonding & cementing: rubber, plastic & rel'd	8571	5,765	32.4	66.3	28.1	5.6	0.20	13
Electronic equipment fabricating & assembling	8534	5,110	32.8	64.2	29.0	6.7	0.20	13
Moulding: rubber, plastic & related	8573	3,645	31.8	66.0	29.4	4.3	0.20	13
Casual, Temporary, Seasonal Employment								
Service station attendants	5145	27,360	22.4	91.0	5.9	3.1	0.44	15
Attendants, sports & recreation	3375	5,460	27.1	79.6	12.1	8.3	0.45	15
Sleeping-car & baggage porters, bellmen	6135	2,275	30.2	71.4	20.2	8.6	0.35	15
Packaging occupations, nec	9317	27,120	29.0	74.8	17.9	7.2	0.34	15
Labouring, etc.: material handling & related	9318	20,945	31.4	68.3	23.1	8.6	0.24	15
Labouring, etc.: food, etc. processing	8228	15,750	31.8	67.8	24.0	8.1	0.23	15
Fish canning, curing & packing	8217	8,695	32.0	66.7	25.3	8.1	0.21	15
Protective service, nec	6119	7,655	31.8	64.3	27.0	8.5	0.20	15
Entry Level Occupations								
Labouring etc.: other service	6198	45,700	25.0	83.8	10.0	6.2	0.53	15
Labouring, etc.: printing & related	9518	1,970	28.4	79.9	14.5	4.8	0.38	15
Labouring, etc.: forestry & logging	7518	9,075	28.8	78.5	15.8	5.7	0.34	15
Chefs & cooks	6121	82,545	29.0	72.0	22.0	6.0	0.33	13
Labouring, etc.: fabricating wood products	8548	4,015	31.8	68.4	21.2	10.2	0.24	15
Labouring, etc., nec: all industries	9918	71,570	36.6	51.2	32.6	16.2	0.13	15
Physically Demanding								
Rotary well-drilling & related	7711	4,725	30.9	73.4	22.8	3.7	0.29	13
Early Retirement								
Other ranks, armed forces	6117	52,300	30.6	68.7	29.7	1.6	0.24	13
Police officers & detectives, government	6112	51,605	37.3	42.0	53.0	5.0	0.22	10
All Occupations	--	--	37.5	46.7	40.2	13.2	--	--
All Crafts and Trades Occupations	--	--	35.9	52.5	36.1	11.4	--	--

Note: The PPH skill codes in the last column are as follows: skilled, 10; semi-skilled, 13; unskilled, 15.

Table 11-A1: Counts of Occupations with Few or No Workers, 1971, 1981, and 1986

	Total			Males			Females		
	1971	1981	1986	1971	1981	1986	1971	1981	1986
Number of occupations with									
No workers	0	0	0	0	0	0	38	2	3
Fewer than 1500	80	56	65	122	85	95	326	279	270
Number of workers	60,705	45,990	53,200	92,475	66,510	71,470	127,660	129,720	130,325
Percent of total employment	0.7	0.4	0.5	1.7	1.0	1.1	4.6	2.9	2.6

CHAPTER 12: A TAXONOMY OF OCCUPATIONAL CHARACTERISTICS

In Chapter 9 we presented a detailed taxonomy of industries at the lowest level of aggregation, based on the SIC coding system. Here we do the same for occupations, using the detailed (four-digit) SOC system. Table 12-1 presents the results in a format similar to that of Table 9-1. Somewhat different break point values had to be used to preserve the divisions at the 1st, 3rd, 7th, and 9th deciles. The break points used for occupations are shown in Table 12-2 and may be compared to those for industries in Table 9-2. Generally the spread is greater in the case of occupations. Occupations are more variable than industries in their demographic characteristics, partly because they are more numerous, and hence smaller, on average, and also because there is more homogeneity within them and more heterogeneity between them, as noted earlier. Thus the range between the 1st and 9th deciles in the 1971 female percentages was from 5 to 60 per cent for industries and from 1 to 67 per cent for occupations. The tendency for the distributions to be more compact for industries was true for all characteristics except rate of growth between 1981 and 1986. The overall rate of growth of the labour force was reduced sharply in this period, and so too the average rate for occupations. However, the industrial response in terms of growth rates was much more diverse, with many negative rates.

The taxonomy is organized around the PPM categories rather than the major and minor groups of the SOC code. Summary characteristics are shown for the 16 PPM groups as well as for each occupation within a group. To permit a linkage with the SOC system, other census publications and the system of major and minor groups, the four-digit occupational codes are provided also, and occupations are listed within groups in order of those codes. The codes are given in the first column of Table 12-1, followed by a somewhat abbreviated version of the occupational title, and then by summary indicators of growth in each of the two intercensal periods, indicators of the sex composition in 1971, 1981 and 1986, and indicators of the age distribution in each of those years. The descriptive symbols used are the same as in Chapter 9. The percentage of total employment associated with each occupation is shown in the table, partly to draw attention to small occupations. Caution should be used in drawing inferences for such occupations.

General Patterns

Tables 12-4 through 12-8 parallel Tables 9-3 through 9-7. We have excluded occupations with fewer than 1,500 workers (a lower cut-off level than in the case of industries – see the Appendix to Chapter 11). The tables show the degree of stability across occupations in growth, sex composition, and age. As with the industries, the dominant feature of the tables is continuity in relative age and sex distributions, but there are differences to be noted. In the case of growth rates, neither the occupations nor the industries show much consistency: relative rates of growth in the 1971-81 interval are poor predictors of growth in the later period (correlations between 1971-81 and 1981-86 based on Table 12-1, and the equivalent for industries, are 0.26 and 0.28).

There is a much higher degree of stability for the other characteristics of occupations, and this was true also for industries. (The median correlation for the age and sex characteristics summarized in the occupational taxonomy is 0.81, based on the 484 detailed occupations shown in Table 12-1.) The tendency for occupations to maintain the same

relative proportions of women is marked (as it was for industries), with correlations of approximately 0.93. From this point of view, the stability of age composition appears somewhat weaker. The correlations relating to age composition fall as low as the mid 0.50 range, while none of the ones for sex composition fall below 0.88. This is one of the several hints in the data that age substitutability exceeded gender substitutability in the period being studied. The patterns of occupational and industrial differentiation between the sexes were barely altered by the inflow of new female participants. In contrast, the inflow of the baby boom generation disrupted established age patterns to a considerable degree.

There seems to be no evidence in the tables of the 1981-86 changes having offset those of 1971-81. Had 1971 represented a kind of equilibrium that was disrupted by the baby boom, the later period might have shown a tendency to revert to the earlier pattern. But there is no evidence of that: the 1971-86 correlations measuring stability are approximately the simple products of the correlations for each of the two periods. Had there been a "bounce back" effect one would have expected them to be larger.

To all this must be added one further point. While the differences are relatively modest, there was an overall tendency for occupations to maintain their age distributions more than was true of industries. Thus it is among industries that the lowest rating of age stability is found, with a correlation of about 0.50, whereas none of the stability measures for occupations fall below 0.70. Industries thus appear more flexible, reacting to the baby boom by accepting altered age composition. Since we are looking at the same work force from two points of view, there must be consistency between the measures. In short, what appears to have happened is that industries reacted to the baby boom by altering their occupational composition. Their flexibility thus exists despite the greater rigidity of the occupational distributions, and this appears to underlie the process by which employment adapted to the changing demographic structure.

Details of the Taxonomy

One may see in the detail of the taxonomy many cases of the kinds of changes that we have been discussing. For example, the special patterns that affected teachers can be seen in the ratings given to secondary school teachers (SOC code 2733, in the employed professionals group). With a growth rate falling in the average range (A in both periods), this predominantly female occupation (FFF) changed from having quite a large proportion of younger workers in 1971 (a 4 in the first digit of the 422 age code), to having a very small proportion in 1986 (a 1 in the first digit of the 152 code). So also university teachers (SOC 2711, in the employed professionals group), rated average in both growth and proportion female, changed from having an average proportion of young and a below average proportion of old workers (342) to having a predominantly middle aged or older age structure (154).

The occupation locomotive engineers and firemen (SOC 9131, in skilled crafts and trades) is an example of an aging occupation with slow growth as the probable cause. The slow growth pattern is shown by a rating of S in both time periods. This is a predominantly male occupation (M+,M+,M+). In all three census years the tendency for its members to be relatively old is shown by a 5 rating for the proportions aged 55 and over (155,145,235). Motion picture projectionists (SOC 9557, in the skilled clerical-sales-service group) show a

similar pattern, with slow growth (S,S), predominantly male composition (M,M,M), and again a tendency toward older workers (225,325,235).

A contrasting pattern of fast growth coupled with youthfulness can be seen, for example, among electronic data processing operators (SOC 4143, in the skilled clerical-sales-service group). With very rapid growth (VR,VR) this is almost exclusively a job held by younger workers (511,511,521). Tellers and cashiers (SOC 4133, in the semi-skilled clerical-sales-service group) are similar, with rapid growth (R,R) and a very small proportion of older workers (521,511,511).

Jobs with a youthful age pattern because they are casual, temporary or seasonal can be seen, for example, in the semi-skilled clerical-sales-service group. Guides (SOC 6144) are rarely middle aged (513,513,512). Similarly, those serving food or beverages (SOC 6125) are youthful (522,511,511). Also, among the semi-skilled white collar workers an occupation such as travel clerk (SOC 4193) is youthful (433,432,432), probably because it is an entry level occupation.

Our search for physically demanding jobs was within the crafts and trades sector. It would perhaps have been more rewarding to look among the arts and entertainment workers found in the semi-professional group. Thus, not surprisingly, athletes (SOC 3373) are almost all young (511,511,511). Dancers and choreographers (SOC 3333) show the same pattern (511,511,511).

A pattern of early retirement shows up as a low rating for the oldest age group. Among employed professionals, for example, commissioned officers in the armed forces (SOC 6116) show this pattern, with age distributions peaking (in a relative sense) in the middle years (351,251,341).

Continued inspection of the ratings leads to the observation of further patterns still requiring explanation. For example, one notes that technicians are ordinarily quite young, with age ratings usually beginning with 4 or 5. Whatever the reason for the pattern, this is likely then to be an area of work in which the coming dearth of young workers will necessitate adjustments of one kind or another.

Table 12-1: Taxonomy of Occupation Charateristics Relative to the Characteristics of the Overall Work Force, 1971, 1981, and 1986

SOC Code (1971)	% of Total Employment 1986	Growth 71-81	Growth 81-86	Male/Female Proportion 1971	Male/Female Proportion 1981	Male/Female Proportion 1986	Age Distribution 1971	Age Distribution 1981	Age Distribution 1986
Typical occupation	--	A	A	A	A	A	333	333	333
PPH Group 1 -- Self-employed professionals	0.96	A	R	A	A	A	244	244	244
2141 Architects	0.06	A	A	M	A	A	253	243	244
2343 Lawyers & notaries	0.36	R	R	A	A	A	344	343	243
3111 Physicians & surgeons	0.40	A	R	A	A	A	244	245	245
3113 Dentists	0.10	A	R	A	A	A	244	244	244
3115 Veterinarians	0.04	R	R	A	A	A	243	333	333
PPH Group 2 -- Employed professionals	7.90	A	A	F	F	F	433	343	243
1171 Accountants, auditors & other financial officers	1.58	A	R	A	A	A	333	343	343
2111 Chemists	0.09	A	R	A	A	A	422	333	343
2112 Geologists	0.06	A	A	M	A	A	431	422	333
2113 Physicists	0.01	A	A	A	M	M	421	243	252
2114 Meterologists	0.01	S	R	A	A	A	332	242	252
2131 Agriculturists & related scientists	0.10	A	R	A	A	A	333	333	333
2133 Biologists & related scientists	0.06	R	A	A	A	A	422	431	332
2142 Chemical engineers	0.05	A	A	M	M	M	432	333	332
2143 Civil engineers	0.26	A	A	M	M	M	342	343	243
2144 Electrical engineers	0.26	A	R	M	M	M	342	343	343
2145 Industrial engineers	0.23	R	A	M	A	A	343	243	243
2147 Mechanical engineers	0.19	A	R	M	M+	M	343	244	244
2151 Metallurgical engineers	0.01	R	S	M	M	M	332	243	343
2153 Mining engineers	0.03	A	A	M	M	M	334	244	244
2154 Petroleum engineers	0.03	VR	S	M	M	M	331	332	432
2155 Aeronautical engineers	0.02	A	A	M	M	M	242	243	234
2157 Nuclear engineers	0.01	VR	S	M+	M	M	431	243	253
2159 Architects & engineers, nec	0.13	VR	R	A	A	A	333	333	244
2160 Supervisors: other architecture & engineering	0.06	VR	A	M	M	A	342	253	154
2161 Surveyors	0.13	A	A	M	M	M	511	511	421
2181 Mathematicians, statisticians & actuaries	0.05	A	A	A	A	A	433	333	332
2311 Economists	0.12	R	R	A	A	A	432	333	342
2313 Sociologists, anthropologists & related	0.01	VR	A	A	A	F	511	421	341
2315 Psychologists	0.09	R	VR	F	F	F	422	332	341
2331 Social workers	0.35	R	VR	F	F	F	422	332	332
2341 Judges & magistrates	0.02	A	R	A	A	A	135	145	135
2350 Supervisors: library, museum & archival sciences	0.02	R	A	F	F	F	235	244	244
2351 Librarians & archivists	0.14	R	R	F+	F+	F+	334	244	244
2391 Educational & vocational counsellors	0.06	A	R	F	F	F	333	253	252
2511 Ministers of religion	0.20	S	A	A	A	A	145	145	145
2711 University teachers	0.29	A	A	A	A	A	342	153	154
2731 Elementary & kindergarten teachers	1.58	S	A	F+	F+	F+	512	341	251
2733 Secondary school teachers	1.11	A	A	F	F	F	422	252	152
2793 Post-secondary school teachers, nec	0.04	VS	VS	F	F	F+	421	252	253
2795 Teachers of exceptional students, nec	0.19	VR	R	F+	F+	F+	423	422	331

Table 12-1: (Continued)

3151 Pharmacists	0.14	A	R	A	F	F	235	335	334
3152 Dietitians & nutritionists	0.03	A	R	F+	F+	F+	413	421	421
6116 Commissioned officers, armed forces	0.15	S	A	M	M	M	351	251	341
PPH Group 3 -- High-level management	3.06	R	R	A	A	A	154	154	154
1113 Government administrators	0.24	A	R	A	A	A	155	154	154
1130 General managers & other senior officials	0.75	A	VR	A	M	A	155	155	155
1131 Management, natural science & engineering	0.11	VR	R	M	M	A	153	154	153
1132 Management, social science & related	0.08	VR	VR	F	F	F	155	254	253
1133 Administrators, teaching & related	0.33	A	R	A	A	A	253	153	153
1134 Administrators, medicine & health	0.14	R	VR	F	F	F	155	155	154
1135 Financial management	0.51	VR	R	A	A	A	244	243	253
1137 Sales & advertising management	0.75	VR	R	A	A	A	153	253	243
1147 Management, transport and communications	0.14	VR	A	A	A	A	153	154	153
PPH Group 4 -- Semi-professionals	6.56	R	R	F	F	F	423	332	332
2163 Draughting	0.29	A	S	A	A	A	521	422	432
2183 Systems analysts, computer programmers & related	0.84	VR	VR	A	A	A	511	511	521
2189 Mathematics, statistics, systems analysts & related, nec	0.01	VR	S	A	F	F	321	511	511
2319 Social sciences, nec	0.05	VR	R	F	F	F	511	511	512
2333 Welfare and community services	0.44	R	VR	F	F	F+	423	323	333
2339 Social work & related, nec	0.05	VR	A	F	F	F	423	511	522
2349 Law and jurisprudence, nec	0.08	R	VR	A	F	F	512	512	422
2399 Social science & related, nec	0.05	VR	R	F	F	F	333	433	422
2513 Nuns & brothers, nor	0.02	VR	VS	F+	F+	F+	125	135	115
2519 Religion, nec	0.05	A	R	F	F	F	135	145	135
2719 university teaching & related, nec	0.13	VR	VR	A	F	F	511	511	511
2739 Elementary & secondary school teaching & related, nec	0.29	R	R	F+	F+	F+	333	242	252
2791 Community college & vocational school teachers	0.29	VR	R	A	F	F	343	253	153
2792 Fine arts school teachers	0.18	A	R	F+	F+	F+	324	334	334
2797 Instructors & training officers, nec	0.12	R	A	F	A	A	343	343	243
2799 Other teaching & related, nec	0.11	R	A	F	F	F	333	343	253
3117 Osteophaths & chiropractors	0.02	R	VR	A	A	A	154	234	244
3119 Health diagnosing & treating, nec	0.04	R	R	F	F	F	324	333	243
3130 Supervisors: nursing occupations	0.17	VS	A	F+	F+	F+	422	253	153
3131 Nurses, graduate except supervisors, nurses-in-training	1.85	VR	R	F+	F+	F+	511	332	342
3137 Physiotherapists, occupational & other therapists	0.16	R	VR	F+	F+	F+	522	522	421
3153 Optometrists	0.02	A	R	A	A	A	155	235	325
3154 Dispensing opticians	0.03	R	R	A	F	F	333	432	333
3311 Painters, sculptors & related artists	0.07	VR	R	A	F	F	334	334	244
3313 Product & interior designers	0.19	A	R	F	F	F	333	333	333
3314 Advertisting & illustrating artists	0.20	R	VR	A	A	F	333	422	422
3315 Photographers & cameramen	0.09	A	R	A	A	A	333	333	423
3319 Fine & commericial art, photography & related, nec	0.01	A	VR	A	A	A	423	321	323
3330 Producers & directors, performing & audio-visual arts	0.11	R	VR	A	A	A	342	342	342
3332 Musicians	0.11	A	A	A	A	A	513	513	413
3333 Dancers & choreographers	0.01	VR	VR	F+	F+	F+	511	511	511
3335 Actors & actresses	0.02	VR	VR	F	F	F	521	422	513
3352 Writers & editors	0.27	R	R	F	F	F	333	333	333
3355 Translators & interpreters	0.06	VR	R	F	F	F	333	333	333
3359 Writing, nec	0.01	R	A	F	F	F	412	423	334
3373 Athletes	0.01	A	R	A	M	A	511	511	511
9111 Air pilots, navigators & flight engineers	0.06	R	A	M+	M	M	341	341	242
9151 Deck officers	0.04	S	A	M+	M+,	M	244	154	145

Table 12-1: (Continued)

PPH Group 5 -- Technicians	1.78	A	A	A	A	A	422	422	432
2117 Physical sciences technologists & technicians	0.15	S	A	A	A	A	521	422	422
2119 Physical sciences, nec	0.01	VS	S	A	A	M	423	334	335
2135 Life sciences technologists & technicians	0.08	A	A	F	A	A	511	511	511
2139 Life sciences, nec	0.01	S	A	F	A	A	522	422	512
2165 Architectural & engineering technologists & technicians	0.40	R	A	M	A	A	432	432	422
2169 Other architecture & engineering, nec	0.02	VS	VS	M	A	A	511	511	511
2353 Technicians: library, museum & archival sciences	0.02	R	S	F+	F	F	513	413	432
3155 Radiological technologists & technicians	0.08	A	A	F+	F+	F+	511	421	431
3156 Medical laboratory technologists & technicians	0.32	R	R	F+	F+	F+	511	521	431
3157 Dental hygienists, assistants & technicians	0.23	R	R	F+	F+	F+	512	511	511
8116 Inspecting, etc: mineral ore treating	0.00	VR	VS	M+	A	M	411	334	432
8146 Inspecting, etc: metal processing	0.02	VR	S	A	A	A	333	334	333
8176 Inspecting, etc: chemicals & related materials	0.03	R	A	A	A	A	332	423	332
8336 Inspecting, etc: metal shaping & forming exc. machining	0.01	R	VS	A	A	A	243	234	334
8396 Inspecting, etc: other machining & related, nec	0.00	A	A	A	F	A	132	341	231
8526 Inspecting, etc: f&a, metal products, nec	0.10	A	A	A	A	A	243	244	244
8535 Electronic & related equipment i&r, nec	0.14	R	R	M	A	M	431	432	431
8736 Itg&s: electrical power, etc. com'ns eqpt. erecting, i&r	0.03	A	S	A	A	A	243	243	343
8796 Inspecting, etc: other construction exc. electrical	0.03	A	VS	M+	M	M	244	244	334
9113 Air transport operating support	0.05	A	S	M	A	A	431	431	342
9153 Engineering officers, ship	0.02	S	A	M+	M+	M+	244	155	245
PPH Group 6 -- Middle management	5.63	R	R	A	A	A	244	244	244
1111 Members of legislative bodies	0.03	R	VR	A	A	A	145	155	145
1116 Inspectors & regulatory officers, government	0.24	A	A	A	A	A	245	245	244
1119 Officials & administrators, government, nec	0.08	VR	R	A	A	A	154	244	154
1136 Personnel & industrial relations management	0.26	VR	R	A	A	A	253	243	253
1141 Purchasing management	0.11	VR	A	A	A	A	244	244	243
1142 Services management	0.12	VR	A	A	A	A	244	254	244
1143 Production management	0.43	VR	A	M	A	A	153	254	253
1145 Management, construction	0.18	VR	S	M	M	M	153	154	155
1149 Other managers & adminstrators, nec	2.20	VR	VR	F	F	F	243	254	244
1174 Personnel & related officers	0.31	A	R	A	F	F	243	343	343
1175 Purchasing agents, exc. wholesale & retail trade	0.14	A	A	A	A	A	244	244	243
1176 Inspectors & regulatory officers, non-government	0.07	R	R	A	A	A	244	244	244
1179 Related to management & administration, nec	0.63	S	VR	A	F	F	244	243	243
3370 Coaches, trainers, etc., sports & recreation	0.18	R	VR	F	F	F	512	511	511
3371 Referees & related officials	0.01	VR	VR	M+	A	A	512	415	514
5191 Buyers, wholesale & retail trade	0.08	A	A	A	A	A	244	334	333
6131 Mangers: hotel, motel & other accommodation	0.20	VS	R	F	A	A	145	244	244
6141 Funeral directors, embalmers & related	0.03	S	R	A	A	A	235	235	235
7131 Farm management	0.33	A	R	M	A	A	245	235	235
PPH Group 7 -- Supervisors	4.81	S	A	A	A	F	244	244	244
1115 Postmasters	0.05	S	A	F	F	F	155	145	155
4110 Supervisors: stenographic & typing	0.03	A	VS	F+	F+	F+	333	343	242
4130 Supervisors: bookkeeping, account-recording & related	0.21	R	S	F	F+	F+	343	333	333
4140 Supervisors: office machine & edp equipment operators	0.06	R	A	F	F	F	431	331	342
4150 Supervisors: material recording, scheduling & distr.	0.13	A	S	A	A	A	244	244	343
4160 Supervisors: library, file clerks & related	0.01	R	S	F	F+	F+	244	244	244
4170 Supervisors: reception, information, mail distribution	0.08	A	A	F	F	P	254	244	154
4190 Supervisors: other clerical & related, nec	0.22	VS	S	F	F ,	F	244	243	243

Table 12-1: (Continued)

5130 Supervisors: sales, commodities	2.45	S	A	A	A	A	244	244	244
5170 Supervisors: sales, services	0.24	VS	VR	A	A	A	244	244	245
5190 Supervisors: other sales	0.03	A	VR	A	A	A	253	243	244
6120 Supervisors: food & beverage preparation & related	0.68	A	R	F	F	F	244	243	333
6130 Supervisors: lodging & other accommodation	0.29	A	VR	F-	F	F	145	145	145
6160 Supervisors: apparel & furnishings services	0.04	VS	A	A	F	F	155	155	155
6190 Supervisors: other service	0.15	A	A	A	A	A	145	145	245
9910 Supervisors & foremen: nec	0.14	VS	VR	A	A	A	244	244	244
PPH Group 8 -- Foremen	2.84	A	A	M	M	M	254	254	254
7180 Foremen: other farming, horticultural & animal husbandry	0.08	R	A	A	A	A	234	244	335
7311 Captains & other officers, fishing vessels	0.03	A	R	M+	M+	M-	243	153	254
7510 Foremen: forestry & logging	0.06	S	A	M	M	M	254	243	244
7710 Foremen: mining & quarrying, incl. oil & gas fields	0.09	A	S	M+	M+	M+	153	253	153
8110 Foremen: mineral ore treating	0.01	S	S	M+	M+	M	145	145	153
8130 Foremen: metal processing & related	0.06	A	S	M	M+	M	154	154	154
8150 Foremen: clay, glass & stone processing, forming & rel.	0.02	S	S	M	M	M	153	154	145
8160 Foremen: chemicals & related materials	0.05	A	A	A	M	A	253	154	253
8210 Foremen: food, beverage & related processing	0.11	S	A	A	A	A	254	254	244
8230 Foremen: wood processing exc. pulp & paper	0.04	A	A	M	M+	M-	155	254	245
8250 Foremen: pulp & papermaking & related	0.05	A	A	M	M+	M-	155	155	155
8260 Foremen: textile processing	0.03	S	S	A	A	A	244	145	244
8290 Foremen: other processing	0.00	S	VS	A	A	A	145	154	155
8310 Foremen: metal machining	0.06	S	A	M	M+	M-	154	154	154
8330 Foremen: metal shaping & forming exc. machining	0.08	A	S	M	M+	M-	253	153	154
8350 Foremen: wood machining	0.01	VS	A	M	M	M	155	343	342
8370 Foremen: clay, glass, stone & related materials machining	0.01	A	A	A	M	M	242	244	244
8390 Foremen: other machining & related	0.00	A	A	M	M	M	144	154	153
8510 Foremen: fabricating & assembling, metal products, nec	0.09	A	A	M	M	M	253	153	153
8530 Foremen: f&a, i&r, electrical, electronic & related	0.08	A	A	A	A	A	253	154	144
8540 Foremen: fabricating, etc., wood products	0.05	R	R	M	M	M	254	244	243
8550 Foremen: fabricating etc., textile, fur & leather	0.07	A	A	A	F	F	245	144	244
8570 Foremen: fabricating, etc., rubber, plastic & related	0.03	A	A	A	A	A	242	242	343
8580 Foremen: mechanics & repairers, exc. electrical	0.31	A	A	M	M+	M+	253	153	253
8590 Foremen: other product fabricating, etc., nec	0.06	S	A	A	A	A	254	145	144
8710 Foremen: excavating, grading, paving & related	0.12	S	S	M	M+	M+	154	154	154
8730 Foremen: electrical power etc. erecting, repairing	0.16	A	S	M	M	M	253	153	153
8780 Foremen: other construction trades	0.59	A	S	M	M+	M+	253	253	244
9110 Foremen: air transport operating	0.02	A	A	M	M	M	253	154	154
9130 Foremen: railway transport operating	0.04	S	A	M+	M+	M	155	145	145
9170 Foremen: motor transport operating	0.15	A	A	M	M	M	253	254	244
9190 Foremen: other transport & related equipment operating	0.01	S	A	M	A	A	154	244	243
9310 Foremen: materials handling & related	0.10	VS	A	M	M	M	244	244	244
9510 Foremen: printing & related	0.07	S	A	A	A	A	244	253	154
9530 Foremen: stationery engine & utilities equipment & rel.	0.06	S	A	M	M	M	154	155	155
9550 Foremen: electronic & related operating, nec	0.01	S	A	A	A	A	253	153	253
9590 Foremen: other crafts & equipment operating, nec	0.01	A	S	A	A	A	332	244	333
PPH Group 9 -- Skilled clerical-sales-service	9.98	R	A	F+	F+	F+	423	333	333
2359 Library, museum & archival sciences, nec	0.02	VR	A	F+	F+	F+	412	511	511
3134 Nursing assistants	0.29	A	S	F+	F+	F+	512	431	342
3337 Radio & television announcers	0.06	R	R	A	A	A	511	511	511
3339 Performing & audio-visual arts, nec	0.04	VR	VR	A	A	A	432	422	512
4111 Secretaries & stenographers	3.44	A	R	F+	F+,	F+	422	432	332

Table 12-1: (Continued)

4131 Bookkeepers & accounting clerks	3.11	R	A	F+	F+	F+	333	333	333
4143 Electronic data-processing equipment operators	0.88	VR	VR	F+	F+	F+	511	511	521
4192 Claim adjusters	0.11	A	VR	F	F	F	333	333	423
5131 Technical salesmen & related advisers	0.14	R	VR	M	A	A	333	333	333
5133 Commerical travellers	0.61	R	VS	M	A	A	333	343	343
5171 Insurance sales	0.49	A	A	A	A	A	333	334	333
5172 Real estate sales	0.54	R	R	A	A	F	155	145	145
5173 Sales agents & traders, securities	0.11	A	R	A	A	A	334	334	334
5174 Advertising sales	0.08	R	R	A	A	F	333	333	333
5177 Business services sales	0.04	R	A	A	A	A	332	342	333
9553 Telegraph operators	0.01	VS	S	A	F	A	243	343	333
9557 Motion picture projectionists	0.01	S	S	M	M	M	225	325	235
PPM Group 10 -- Skilled crafts and trades	9.52	A	A	A	M	M	333	333	333
6111 Fire-fighting	0.21	A	A	M+	M+	M+	342	252	252
6112 Police officers & detectives, government	0.47	A	A	M	M	M	421	331	341
6113 Police agents & investigators, private	0.04	A	A	A	A	A	344	244	234
7511 Forestry conservation	0.04	VS	R	M	A	A	323	423	512
7516 Log inspecting, grading, scaling & related	0.01	S	S	M	M	A	334	334	333
7517 Log hoisting, sorting, moving & related	0.08	A	S	M	M+	M+	422	432	332
8131 Furnacemen, metal smelting, converting & refining	0.04	S	VS	M+	M	M	343	333	333
8133 Metal heat treating	0.01	A	VS	M+	M	M	244	334	333
8135 Metal rolling	0.02	S	S	M+	M	M	243	343	244
8137 Moulding, coremaking & metal casting	0.05	S	S	A	M	M	343	333	333
8141 Metal extruding & drawing	0.02	A	S	A	A	A	332	333	333
8143 Plating, metal spraying & related	0.02	A	S	A	A	A	333	332	433
8151 Furnace & kiln workers: clay, glass & stone	0.01	VS	S	A	A	A	333	333	334
8155 Forming: clay, glass & stone	0.03	A	S	A	A	A	333	332	334
8161 Mixing & blending, chemicals & related materials	0.04	A	S	A	A	A	333	333	423
8163 Filtering, straining & separating, chemicals & rel. mtls.	0.00	S	S	A	A	A	333	323	332
8165 Distilling, subliming & carbonizing, chemicals & rel.mtls	0.03	A	A	M	M	M+	342	422	432
8167 Roasting, cooking & drying, chemicals & related materials	0.00	S	VS	M	M	A	333	323	324
8231 Sawmill sawyers & related	0.08	A	S	M	M	M	333	333	333
8311 Tool & die making	0.11	A	A	M	M	M	333	234	335
8313 Machinists & machine tool setting-up	0.40	A	A	A	M	M	333	333	333
8316 Inspecting, etc: metal machining	0.02	S	A	A	A	A	343	244	333
8333 Sheet metal workers	0.17	A	S	M	M	M	333	333	333
8335 Welding & flame cutting	0.66	A	S	A	M	M	332	332	333
8337 Boilermakers, platers & structural metal workers	0.03	S	VS	M+	M+	M+	244	343	244
8351 Wood patternmaking	0.00	A	A	M+	M	M	244	144	334
8376 Inspecting, etc: clay, glass & stone machining	0.01	VR	A	F	F	A	233	333	333
8391 Engravers, etchers & related	0.01	R	VS	A	F	F	333	333	332
8395 Patternmakers & mouldmakers, nec	0.02	A	A	A	A	A	343	333	333
8399 Other machining & related, nec	0.01	A	VR	A	A	A	333	323	323
8525 Business & commercial machines f&a, nec	0.01	R	VS	F	F	F	332	422	432
8529 Other fabricating & assembling: metal products, nec	0.10	A	A	A	A	A	333	333	333
8537 Radio & television service repairers	0.08	S	A	M	M	M	333	333	333
8541 Cabinet & wood furniture makers	0.24	R	A	A	A	A	333	433	423
8553 Tailors and dressmakers	0.25	VS	VR	F+	F	F+	334	145	244
8555 Furriers	0.02	A	A	F	F	F	145	235	225
8581 Motor vehicle mechanics & repairers	1.21	A	A	M	M+	M+	333	432	422
8582 Aircraft mechanics & repairers	0.09	A	A	M	M+	M+	343	333	333
8583 Rail transport equipment mechanics & repairers	0.07	S	S	M+	M+	M+	245	335	334
8584 Ind'l, farm, construction machinery mechanics & repairers	0.78	R	A	M	M+	M+	243	333	243

Table 12-1: (Continued)

8585 Business & commercial machine mechanics & repairers	0.09	A	A	M	M	M	522	422	421
8586 Inspecting, etc: equipment repair, exc. electrical	0.02	A	S	M	M	M	244	235	234
8588 Precision instrument mechanics & repairers	0.04	A	A	M	M	M+	332	333	333
8591 Jewellery & silverware fabricating, etc.	0.05	A	R	A	A	A	333	333	333
8592 Marine craft fabricating, etc.	0.06	R	S	M	M	M	235	334	334
8731 Electrical power line workers & related	0.10	A	A	M	M+	M+	332	432	332
8733 Construction electricians & repairers	0.39	S	S	M	M+	M+	422	432	333
8735 Wire communications & rel. equipment erecting & repairing	0.25	A	A	M+	M	M	421	431	332
8781 Carpenters & related	0.92	A	A	M+	M+	M+	245	334	334
8782 Brick & stone masons & tile setters	0.18	A	A	M+	M+	M+	343	243	244
8784 Plasterers & related	0.13	A	A	M+	M+	M+	332	332	333
8785 Painters, paperhangers & related	0.30	S	A	M	M	M	334	333	333
8791 Pipefitting, plumbing & related	0.37	S	A	M+	M+	M+	333	333	343
8795 Glaziers	0.05	R	R	M	M	M	432	521	522
9119 Air transport operating, nec	0.01	VR	S	A	A	A	223	331	332
9131 Locomotive engineers & firemen	0.06	S	S	M+	M+	M+	155	145	235
9133 Conductors, brake workers: railway	0.07	VS	S	M+	M	M	244	334	334
9311 Hoisting, nec	0.15	S	S	M+	M+	M+	243	243	244
9511 Typesetting & compositors	0.13	S	R	A	A	A	333	333	333
9512 Printing press	0.15	A	A	A	A	A	422	432	432
9513 Stereotypers & electrotypers	0.00	VS	VS	A	A	M+	233	132	321
9514 Printing engravers, exc. photoengravers	0.03	S	A	A	A	A	421	342	333
9515 Photoengravers & related	0.02	R	A	A	A	A	332	342	333
9517 Bookbinders & related	0.07	A	A	F+	F	F	333	333	333
9531 Power station operators	0.06	A	A	M+	M	M	243	333	333
9539 Stationery engine & utilities equipment operating, nec	0.26	S	S	M	M+	M+	245	235	334
9551 Radio & television broadcasting equipment operators	0.04	S	R	A	A	A	521	521	422
9555 Sound recording & reproduction equipment operators	0.02	VR	A	A	A	A	421	521	521
9559 Other electronic & related equipment operating, nec	0.00	R	A	A	A	A	411	511	511
9916 Inspecting, etc: nec	0.03	VS	A	A	A	A	334	333	333
PPH Group 11 -- Farmers	1.78	S	A	M	A	A	145	145	135
7112 Farmers	1.78	S	A	M	A	A	145	145	135
PPH Group 12 -- Semi-skilled clerical-sales-service	15.44	A	A	F	F+	F	423	423	422
3135 Nursing aides & orderlies	0.65	S	A	F+	F+	F+	333	333	333
3139 Nursing, therapy & related assisting occupations, nec	0.22	A	VR	F+	F+	F+	333	333	333
3159 Other occupations in medicine & health, nec	0.16	VR	VR	F+	F+	F+	423	422	522
4113 Typists & clerk-typists	0.44	S	VS	F+	F+	F+	512	422	433
4133 Tellers & cashiers	2.20	R	R	F+	F+	F+	521	511	511
4135 Insurance, bank & other finance clerks	0.39	R	R	F+	F+	F+	512	511	421
4137 Statistical clerks	0.06	A	VS	F	F+	F	423	323	422
4139 Bookkeeping, account-recording & related, nec	0.04	A	S	F	F+	F+	423	422	432
4141 Office machine operators	0.08	VS	VS	F+	F+	F	522	422	423
4151 Production clerks	0.12	A	S	A	A	F	333	333	332
4153 Shipping & receiving clerks	0.76	A	A	A	A	A	323	423	423
4155 Stock clerks & related	0.76	A	A	A	A	A	323	423	413
4157 Weighers	0.03	S	S	A	A	A	334	324	333
4159 Material recording, scheduling & distributing, nec	0.06	R	A	F	F	F	433	333	423
4161 Library & file clerks	0.31	A	A	F+	F+	F+	413	423	423
4169 Library, file & correspondence clerks & related, nec	0.02	A	S	F	F+	F+	423	422	422
4171 Receptionists & information clerks	0.87	R	R	F+	F+	F+	423	423	423
4175 Telephone operators	0.23	S	S	F+	F+	F+	423	333	333
4191 Collectors	0.08	R	A	F	F	F	423	422	332

Table 12-1: (Continued)

4193 Travel clerks, ticket, station & freight agents	0.24	R	R	F	F	F	433	432	432
4195 Personnel clerks	0.05	VR	VS	F+	F+	F+	333	423	332
5135 Sales clerks, salespersons, commodities, nec	4.50	A	R	F	F	F	333	323	423
5179 Sales: services, nec	0.03	S	VR	A	A	A	333	334	333
5193 Route drivers	0.12	VS	S	M	M	M	432	332	333
5199 Other sales, nec	0.06	A	VR	F+	F	F	333	333	423
6123 Bartenders	0.31	R	R	A	F	F	334	522	511
6125 Food & beverage serving	1.82	A	A	F+	F+	F+	522	511	511
6143 Barbers, hairdressers & related	0.71	S	R	F	F+	F+	423	432	422
6144 Guides	0.05	A	VR	F	F	F	513	513	512
6145 Hostesses & stewards, except food & beverage	0.07	A	R	F+	F+	F+	512	521	431
PPM Group 13 -- Semi-skilled crafts and trades	9.26	A	A	A	A	A	333	333	333
6117 Other ranks, armed forces	0.51	VS	R	M	A	A	521	521	511
6121 Chefs & cooks	1.38	R	R	F	F	F	334	333	423
7313 Net, trap, line fishing	0.24	A	A	M	M	M	334	333	333
7513 Timber cutting & related	0.14	S	A	M	M+	M+	332	333	333
7711 Rotary well-drilling & related	0.04	VR	VS	M+	M+	M+	511	511	511
7713 Other rock & soil drilling	0.06	S	VS	M+	M+	M+	421	432	331
7715 Blasting	0.01	S	S	M+	M+	M+	243	333	343
7717 Mining & quarrying: cutting, handling & loading	0.12	S	S	M+	M+	M+	333	333	243
7719 Mining & quarrying incl. oil & gas fields, nec	0.06	S	S	A	M	M+	432	422	422
8111 Crushing & grinding, mineral ores	0.01	A	VS	M+	M	M	333	323	333
8113 Mixing, separating, filtering & related, mineral ores	0.01	A	VS	M	M	M	333	423	332
8115 Melting & roasting, mineral ores	0.00	R	VS	M+	M+	M+	242	323	334
8149 Metal processing & related, nec	0.07	VR	VS	A	M	M	333	333	333
8153 Separating, grinding, etc: clay, glass & stone	0.02	S	S	M	M+	M+	333	333	324
8156 Inspecting, etc: clay, glass & stone processing & forming	0.01	VS	A	F	F	F	432	343	333
8171 Crushing & grinding, chemicals & related materials	0.00	VS	S	A	M	A	323	422	421
8173 Coating & calendering, chemicals & related materials	0.01	VS	S	A	A	A	332	421	421
8211 Flour & grain milling	0.02	A	S	M	M	M	334	334	423
8213 Baking, confectionery making & related	0.28	A	R	F	A	F	333	333	423
8215 Slaughtering & meat cutting, canning, curing & packing	0.35	A	A	A	A	A	333	333	333
8223 Milk processing	0.04	S	A	A	A	A	423	423	423
8225 Sugar processing & related	0.00	S	S	A	A	A	154	235	234
8226 Inspecting, etc: food, beverage & related processing	0.06	R	A	F	F	F	234	334	333
8227 Beverage processing	0.03	A	A	A	A	A	343	333	334
8233 Plywood making & related	0.02	A	S	A	A	A	333	333	333
8235 Wood treating	0.01	R	A	A	A	A	333	333	323
8236 Inspecting, etc: wood processing, exc. pulp & paper	0.04	A	S	A	A	A	334	333	333
8251 Cellulose pulp preparing	0.03	VS	S	M+	M+	M	343	334	244
8253 Papermaking & finishing	0.08	A	S	M+	M	M	332	332	333
8256 Inspecting, etc: pulp & papermaking	0.03	A	A	A	A	A	432	333	333
8261 Textile fibre preparing	0.01	S	VS	A	A	A	324	324	333
8263 Textile spinning & twisting	0.01	VS	VS	F	F	F	432	332	333
8265 Textile winding & reeling	0.02	S	S	F+	F	F	333	422	333
8267 Textile weaving	0.03	S	VS	A	F	F	333	333	333
8271 Knitting	0.03	S	S	F	F	F	423	333	333
8273 Textile bleaching & dyeing	0.01	S	S	A	A	A	423	423	423
8275 Textile finishing & calendering	0.01	A	VS	F	A	A	334	332	333
8276 Inspecting, etc: textile processing	0.03	A	VS	F	F	F	333	333	333
8293 Tobacco processing	0.02	VS	A	F	F	F	333	153	154
8295 Hide & pelt processing	0.01	S	A	A	A	A	334	335	334
8296 Inspecting, etc: other processing	0.01	A	A	F	F	F	234	244	245

Table 12-1: (Continued)

8315 Machine tool operating	0.08	VS	VS	A	A	A	333	333	333
8319 Metal machining, nec	0.02	VR	VS	A	A	A	333	333	324
8331 Forging	0.03	S	S	M+	M	M	245	235	334
8334 Metalworking-machine operators, nec	0.13	S	S	A	A	A	333	333	333
8339 Metal shaping & forming, exc. machining, nec	0.03	S	A	A	A	A	333	333	333
8353 Wood sawing & related, exc. sawmill	0.03	A	S	M	M	M	324	423	423
8355 Planing, turning, shaping & related wood machining	0.03	VS	VS	A	M	M	333	423	423
8356 Inspecting, etc: wood machining	0.00	VR	A	F	A	A	111	222	315
8357 Wood sanding	0.01	S	VS	A	A	A	423	423	511
8371 Cutting & shaping: clay, glass & stone	0.03	A	A	A	A	A	333	422	423
8373 Abrading & polishing: clay, glass & stone, nec	0.02	A	A	A	A	A	422	422	521
8379 Clay, glass & stone & related materials machining, nec	0.02	R	A	A	A	A	332	422	422
8393 Filing, grinding, buffing, cleaning & polishing, nec	0.08	S	S	A	A	M	334	333	334
8511 Engine & related equipment fabricating & assembling, nec	0.04	VR	A	A	A	A	332	332	332
8513 Motor vehicle fabricating & assembling, nec	0.33	A	VR	A	A	A	431	332	332
8515 Aircraft fabricating & assembling, nec	0.05	A	A	A	A	A	253	333	334
8523 Industrial, farm, etc. fabricating & assembling, nec	0.05	R	S	A	M	M	333	333	333
8527 Precision instruments & related f&a, nec	0.02	A	S	F	F	A	243	344	235
8531 Electrical equipment fabricating & assembling	0.16	A	S	F	F	F	332	333	333
8533 Electrical & related equipment i&r, nec	0.36	R	A	M	M	M	333	333	333
8534 Electronic equipment fabricating & assembling	0.12	A	A	F+	F	F	431	332	332
8536 Inspecting, etc: electrical, electronic & rel. eqpt.	0.07	A	A	F	A	A	342	333	333
8546 Inspecting, etc: fabricating, etc., wood products	0.00	VR	S	F	A	A	113	412	432
8549 Fabricating, etc., wood products, nec	0.05	R	A	A	A	A	334	423	424
8551 Patternmaking, marking & cutting: textile, fur & leather	0.08	S	A	F	A	A	324	334	334
8557 Milliners, hat & cap makers	0.00	A	VS	F	F	F	135	315	135
8561 Shoemaking & repairing	0.09	S	S	F	F	F	334	334	334
8562 Upholsterers	0.10	A	A	A	A	A	333	343	333
8563 Sewing machine operators: textile & similar materials	0.56	A	VS	F+	F+	F+	333	243	243
8566 Inspecting, etc: textile, fur & leather	0.04	R	S	F+	F+	F+	334	334	333
8569 Fabricating, etc: textile, fur & leather, nec	0.10	A	S	F+	F	F	333	343	333
8571 Bonding & cementing: rubber, plastic & related	0.06	A	S	A	A	A	521	521	522
8573 Moulding: rubber, plastic & related	0.05	A	A	F	A	A	422	431	421
8575 Cutting & finishing: rubber, plastic & related	0.01	R	A	A	A	A	331	432	522
8576 Inspecting, etc: f&a & repairing, rubber, plastic & rel.	0.02	A	A	F	A	A	332	332	332
8587 Watch & clock repairers	0.01	VS	VS	M	A	M	145	235	135
8589 Mechanics & repairers, exc. electrical	0.15	S	A	M	M	M	333	334	333
8595 Painting & decorating, exc. construction	0.21	R	A	A	A	A	333	333	423
8596 Inspecting, etc: other product fabricating, etc.	0.01	A	S	F	F	F	333	334	334
8711 Excavating, grading & related	0.35	R	S	M+	M+	M+	343	343	243
8713 Paving, surfacing & related	0.06	R	A	M+	M+	M+	333	333	333
8739 Electrical power, etc. erecting & repairing, nec	0.03	S	A	M	M	M	332	422	332
8783 Concrete finishing & related	0.05	S	S	M	M+	M+	243	243	234
8786 Insulating: construction	0.04	R	VS	M	M	M	432	422	332
8787 Roofing, waterproofing & related	0.09	R	A	M+	M	M+	432	422	522
8793 Structural metal erectors	0.05	A	VS	M+	M+	M+	432	332	333
8799 Other construction trades, nec	0.33	R	A	M	M	M	333	333	433
9135 Railway transport operating support	0.05	A	S	M	M	M	243	333	334
9157 Engine & boiler-room crew, ship	0.01	VS	VS	M+	M+	M+	333	333	244
9171 Bus drivers	0.46	A	A	A	A	A	254	244	154
9179 Motor transport operating, nec	0.17	VR	VR	A	A	A	343	333	422
9191 Subway & street railway operating	0.01	A	R	A	M	M	145	244	244
9193 Motormen, dinkeymen, exc. rail transport	0.00	VS	VS	M+	M	M	333	334	244
9315 Material handling equipment operators, nec	0.28	A	S	M	M	M	332	333	333

Table 12-1: (Continued)

9519 Printing & related, nec	0.11	A	VR	F	F	F	422	422	422
9591 Photographic processing	0.08	A	R	F	F	F	522	522	522
9599 Other crafts & equipment operating, nec	0.00	R	VR	F	F	F	311	411	331
PPM Group 14 -- Unskilled clerical-sales-service	4.52	A	R	F	F+	F+	324	334	323
4172 Mail carriers	0.23	A	A	A	A	A	234	334	243
4173 Mail & postal clerks	0.32	A	A	F	F	F	334	334	334
4177 Messengers	0.06	S	A	A	A	A	414	415	414
4179 Reception, information, mail & message distribution, nec	0.14	A	A	F	F	F	433	423	423
4194 Hotel clerks	0.09	A	R	F	F	F	225	424	513
4197 General office clerks	1.27	S	R	F	F+	F+	423	333	333
4199 Other clerical & related, nec	0.68	A	A	F	F+	F	333	333	423
5141 Street vendors & door-to-door sales	0.15	A	R	F	F	F	334	333	334
5143 Newspaper carriers, vendors	0.07	VS	VR	A	A	A	511	511	511
5149 Sales: commodities, nec	0.09	A	VR	F	F	F	333	333	423
6129 Food & beverage preparation & related service, nec	0.37	R	VR	F+	F+	F+	334	333	423
6139 Lodging & other accommodation, nec	0.02	R	VR	F	A	F	235	325	315
6147 Babysitters	0.57	R	VR	F+	F+	F+	513	413	423
6149 Personal service, nec	0.36	VS	R	F+	F+	F+	325	235	335
6199 Other service, nec	0.08	A	R	A	A	A	315	414	514
PPM Group 15 -- Unskilled labourers	12.07	S	A	A	A	A	333	333	323
3375 Attendants, sports & recreation	0.07	R	A	A	A	A	513	513	512
3379 Sports & recreation, nec	0.02	A	VR	A	A	A	324	422	423
5145 Service station attendants	0.28	S	A	A	A	A	512	511	511
6115 Guards & related security	0.72	A	R	A	A	A	135	235	225
6119 Protective service, nec	0.12	R	R	A	F	F	513	512	512
6133 Chambermaids and housemen	0.21	R	A	F+	F+	F+	234	334	333
6135 Sleeping-car & baggage porters, bellmen	0.02	VS	A	A	A	M	324	413	513
6162 Laundering & dry cleaning	0.15	A	A	F+	F+	F+	234	245	245
6165 Pressing	0.07	VS	S	F+	F+	F+	333	243	244
6169 Apparel & furnishings service, nec	0.06	A	R	F+	F	F	333	323	423
6191 Janitors, charworkers & cleaners	1.82	A	A	F	F	F	235	235	235
6193 Elevator-operating	0.01	VS	VS	A	A	A	225	235	315
6198 Labouring etc.: other service	0.62	A	A	F	F	A	423	513	513
7315 Hunting, trapping & related	0.00	S	A	M+	M	M	234	135	235
7319 Fishing, hunting, trapping & related, nec	0.03	R	R	A	A	A	324	324	422
7518 Labouring, etc: forestry & logging	0.10	S	VR	A	A	A	512	511	511
7519 Foresty & logging, nec	0.07	VS	A	M	M+	M+	432	332	333
7718 Labouring, etc: mining & quarrying incl. oil & gas fields	0.07	A	VS	M	M	M	422	512	422
8118 Labouring, etc: mineral ore treating	0.01	S	VS	M+	M	M	522	422	332
8119 Mineral ore treating, nec	0.00	R	S	A	M	M	323	333	323
8148 Labouring, etc: metal processing	0.09	R	R	A	M	M	333	423	423
8158 Labouring, etc: clay, glass & stone processing & forming	0.02	A	A	A	A	A	423	422	422
8159 Clay, glass and stone processing & forming & related, nec	0.02	VS	S	A	A	A	432	332	333
8178 Labouring, etc: chemicals & related materials	0.04	A	R	A	A	A	422	422	422
8179 Chemicals & related materials processing, nec	0.13	A	A	A	A	A	32	432	432
8217 Fish canning, curing & packing	0.19	R	A	F	F	F	423	422	422
8221 Fruit & vegetable canning, preserving & packing	0.02	S	VS	F	F	F	334	333	334
8228 Labouring, etc: food, beverage, related processing	0.21	A	VR	F	A	A	423	423	423
8229 Food, beverage & related processing, nec	0.06	A	A	F	A	A	333	333	333
8238 Labouring, etc: wood processing, exc. pulp & paper	0.12	A	A	M	M	M	423	512	512
8239 Wood processing, exc. pulp & paper, nec	0.05	A	S	M	M	M	423	422	423
8258 Labouring, etc: pulp & papermaking	0.10	A	A	M	M	M	433	513	423

Table 12-1: (Concluded)

8259 Pulp & papermaking & related, nec	0.06	A	A	A	A	M	333	333	334
8278 Labouring, etc: textile processing	0.06	R	A	F	F	F	423	423	423
8279 Textile processing, nec	0.02	VS	S	F	F	F	432	333	332
8298 Labouring, etc: other processing	0.01	S	R	F	F	A	331	332	431
8299 Other processing, nec	0.00	S	A	A	M	A	324	334	324
8359 Wood machining, nec	0.01	VS	R	A	A	M	334	314	422
8528 Labouring, etc: f&a, metal products, nec	0.04	R	A	A	A	A	423	422	333
8538 Labouring, etc: f&a, i&r, electrical & rel. equipment	0.03	A	VR	F	F	F	422	423	432
8539 F&a & repairing, electrical, electronic & rel.eqpt., nec	0.02	S	A	F	A	A	333	333	334
8548 Labouring, etc: fabricating, etc., wood products	0.04	A	R	A	A	A	423	512	513
8568 Labouring, etc: textile, fur & leather	0.04	R	A	F	F	F	422	522	423
8578 Labouring, etc: f&a, i&r, rubber, plastic & related	0.05	A	R	F	A	A	433	432	522
8579 Fabricating, etc., rubber, plastic & related, nec	0.07	R	A	A	A	A	432	432	432
8593 Paper product fabricating, etc.	0.08	VS	S	A	A	A	333	333	332
8598 Labouring, etc: other product fabricating, etc.	0.02	VS	A	A	A	A	423	512	423
8599 Other product fabricating, etc., nec	0.18	A	R	F	F	A	333	333	333
8715 Railway section & track workers	0.08	S	S	M+	M+	M+	245	423	413
8718 Labouring, etc: excavating, grading, paving & related	0.12	VS	A	M	M+	M+	334	334	334
8719 Excavating, grading, paving & related, nec	0.04	S	A	M	M+	M+	343	333	433
8738 Labouring, etc: electrical power, etc. com'ns. eqpt e&i&r	0.02	S	R	M	M	M	422	423	422
8798 Labouring, etc: other construction trades	0.50	S	A	M	M+	M+	422	422	422
9139 Railway transport operating, nec	0.01	R	S	A	M+	M	234	235	335
9155 Deck crew, ship	0.04	S	S	M+	M	M	432	333	333
9159 Water transport operating, nec	0.02	VS	A	A	M	A	245	235	235
9173 Taxi drivers & chauffeurs	0.24	S	A	M	A	M	244	244	244
9175 Truck drivers	2.01	A	A	M	M	M	332	332	333
9199 Other transport equipment operating, nec	0.02	S	R	M	M	M	334	244	244
9313 Longshore workers, stevedores & freight handlers	0.35	A	A	M+	M	M	423	423	423
9317 Packaging occupations, nec	0.55	S	A	F	F	F	422	433	423
9318 Labouring, etc: material handling & related, nec	0.20	S	A	A	M	M	512	513	513
9319 Other material handling & related, nec	0.06	A	A	A	A	A	423	422	423
9518 Labouring, etc: printing & related	0.03	R	A	A	F	F	511	512	512
9918 Labouring, etc, nec: all industries	0.74	A	R	A	A	A	324	324	324
9919 Other occupations, nec	0.81	VS	R	A	A	A	323	423	413
PPM Group 16 -- Farm labourers	2.13	VS	R	F	A	A	423	423	414
7182 Farm workers	1.11	VS	VR	F	F	F	423	423	424
7195 Nursery & related workers	0.62	A	R	A	A	A	325	414	513
7197 Farm machinery operators	0.08	R	A	A	A	A	513	414	415
7199 Others, nec	0.33	VR	VS	F	F	F	323	323	325
PPM Group 17 -- Not stated	2.87	VS	A	F	F	F	324	325	325

Table 12-2: Break Point Values Used in Occupation Characteristics Taxonomy

	Break Points			
	1	2	3	4
Growth rate -- 1971-81	-0.89	1.79	5.98	10.14
Growth rate -- 1981-86	-5.77	-2.50	1.98	5.64
Female proportion -- 1971	0.01	0.04	0.30	0.67
Female proportion -- 1981	0.02	0.07	0.38	0.70
Female proportion -- 1986	0.02	0.09	0.39	0.71
Proportion under 35 -- 1971	0.24	0.39	0.52	0.62
Proportion 35-54 -- 1971	0.26	0.35	0.45	0.54
Proportion 55 and over -- 1971	0.06	0.10	0.16	0.21
Proportion under 35 -- 1981	0.32	0.45	0.59	0.67
Proportion 35-54 -- 1981	0.24	0.31	0.40	0.50
Proportion 55 and over -- 1981	0.05	0.09	0.13	0.18
Proportion under 35 -- 1986	0.30	0.42	0.55	0.63
Proportion 35-54 -- 1986	0.28	0.35	0.44	0.54
Proportion 55 and over -- 1986	0.06	0.08	0.13	0.17

Note: The definitions of break points are provided in the text.

Table 12-3: Taxonomy of Occupation Charateristics -- Summary, PPM Groups

		% of Total Employment	Growth		Female Proportion			Age Distribution		
		1986	71-81	81-86	1971	1981	1986	1971	1981	1986
	Typical occupation	--	A	A	A	A	A	333	333	333
1	Self-employed professionals	0.96	A	R	A	A	A	244	244	244
2	Employed professionals	7.90	A	A	F	F	F	433	343	243
3	High-level management	3.06	R	R	A	A	A	154	154	154
4	Semi-professionals	6.56	R	R	F	F	F	423	332	332
5	Technicians	1.78	A	A	A	A	A	422	422	432
6	Middle management	5.63	R	R	A	A	A	244	244	244
7	Supervisors	4.81	S	A	A	A	F	244	244	244
8	Foremen	2.84	A	A	M	M	M	254	254	254
9	Skilled clerical-sales-service	9.98	R	A	F+	F+	F+	423	333	333
10	Skilled crafts and trades	9.52	A	A	A	M	M	333	333	333
11	Farmers	1.78	S	A	M	A	A	145	145	135
12	Semi-skilled clerical-sales-service	15.44	A	A	F	F+	F	423	423	422
13	Semi-skilled crafts and trades	9.26	A	A	A	A	A	333	333	333
14	Unskilled clerical-sales-service	4.52	A	R	F	F+	F+	324	334	323
15	Unskilled labourers	12.07	S	A	A	A	A	333	333	323
16	Farm labourers	2.13	VS	R	F	A	A	423	423	414
17	Not stated	2.87	VS	A	F	F	F	324	325	325

Table 12-4: Occupation Growth Rates -- Comparison of Categories in 1971-81 and 1981-86

Category in 1971-81	Category in 1981-86					
	VS	S	A	R	VR	Total
VS	9	13	7	3	6	38
S	16	25	31	6	2	80
A	12	39	79	34	7	171
R	3	5	36	24	6	74
VR	5	5	10	9	7	36
Total	45	87	163	76	28	399

Note: Figures in the table are numbers of occupations in the various categories; occupations with fewer than 1,500 workers in any of the three census years are excluded.

Table 12-5: Occupation Male/Female Employment Proportions -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	F+	F	A	M	M+	Total
F+	39	9	0	0	0	48
F	7	59	14	0	0	80
A	0	18	121	12	1	152
M	0	0	15	47	23	85
M+	0	0	0	14	20	34
Total	46	86	150	73	44	399

Note: Figures in the table are numbers of occupations in the various categories; occupations with fewer than 1,500 workers in any of the three census years are excluded.

Table 12-6: Occupation Proportions of Workers Under 35 -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	1	2	3	4	5	Total
1	24	9	0	0	0	33
2	11	44	21	1	1	78
3	4	25	95	34	5	163
4	1	1	36	34	9	81
5	0	1	2	17	24	44
Total	40	80	154	86	39	399

Note: Figures in the table are numbers of occupations in the various categories; occupations with fewer than 1,500 workers in any of the three census years are excluded.

Table 12-7: Occupation Proportions of Workers 35-54 -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	1	2	3	4	5	Total
1	20	8	5	1	1	35
2	15	37	23	5	2	82
3	3	31	102	17	4	157
4	1	1	27	44	8	81
5	0	0	2	16	26	44
Total	39	77	159	83	41	399

Note: Figures in the table are numbers of occupations in the various categories; occupations with fewer than 1,500 workers in any of the three census years are excluded.

Table 12-8: Occupation Proportions of Workers 55 and Over -- Comparison of Categories in 1971 and 1986

Category in 1971	Category in 1986					
	1	2	3	4	5	Total
1	17	13	4	0	0	34
2	12	34	31	4	0	81
3	2	27	106	26	7	168
4	1	1	27	40	8	77
5	0	0	4	12	23	39
Total	32	75	172	82	38	399

Note: Figures in the table are numbers of occupations in the various categories; occupations with fewer than 1,500 workers in any of the three census years are excluded.

PART IV CONCLUSION

CHAPTER 13: SUMMARY OF FINDINGS

This study has been concerned with the demographics of employment. It has had as a central focus the ways in which the age and sex distributions of industrial and occupational employment changed during the period 1971-86, as evidenced by successive censuses, and the implications of those changes.

Most of the study has been based on 1971, 1981, and 1986 census data. However, we began, in Part I, by establishing the general setting within which the patterns revealed by the censuses should be viewed. The following points are of particular importance in that connection.

- The post-World War II period has witnessed very rapid growth of the Canadian labour force.
- The factors associated with that growth were
  - immigration (especially in the 1950s);
  - more importantly, the long-term rise in female participation rates;
  - more importantly still, the coming of working age of the baby boom generation.
- The outlook for the next few decades, based on our "standard" projection assumptions, is for much slower growth in the 1990s, and thereafter progressively slower growth and eventual decline, in consequence especially of the reduced numbers of young labour force entrants.
- The prospect of slower labour force growth is affected only in small measure by changes in the assumptions underlying the projections; thus slower growth seems inevitable.
  - Differences in mortality assumptions have a negligible effect.
  - Even if fertility rates were to rise or fall immediately the rates of inflow of young workers would not be affected for almost two decades.
  - Alternative assumptions about rates of labour force participation also make rather little difference.
  - Substantial variations in immigration would leave the general growth pattern unchanged, affecting only the date at which labour force growth would cease.

- The trend towards slower labour force growth is widely shared among industrialized nations, including Canada's major trading partners.

- Slower labour force growth implies slower rates of growth of the gross national product, but not necessarily of income per capita.

- The age composition of the labour force is undergoing major change.

  - The baby boom generation lowered the average age when it entered the labour force and is now raising the average as it grows older.

  - The impact will be reflected in greater proportions of older workers in the future.

- Women have come to represent a larger fraction of the labour force; that fraction is expected to increase further, although the gains will be more modest than in recent decades.

  - According to the standard projection, women will account for 46 per cent of the total by 2016, up from 43 per cent in 1986 and only 23 per cent in 1951.

- A cohort analysis of employment over the periods 1971-81 and 1981-86 indicates a continuation of the historical tendency for female age patterns to approach more closely those of men.

- As the age structure of the labour force continues to change, younger employees will have to be replaced by older ones; that will be true in the aggregate, but more especially in those segments of the economy that traditionally have relied on a supply of youthful workers to staff their operations.

Parts II and III of the study involved detailed examinations of the 1971, 1981, and 1986 census data as they relate to industries and occupations. Particular attention was paid to patterns of growth and the changing age and sex composition of employment. With respect to industries, the subject of Part II, the most noteworthy findings were the following.

- There has been strong growth of service industries generally, both in absolute and in relative terms.

  - Services accounted for 58 per cent of employment in 1971, 68 per cent in 1986.

  - Concomitantly, the manufacturing sector's share of employment decreased, as did that of primary industries.

  - Thus Canada has become very much a service-oriented economy, a pattern similar to that observed in other industrialized nations.

- The growth of the service sector has been unevenly spread.
  - There was relatively slow growth in transportation.
  - There was an average rate of growth in public administration and defence as a whole but within that group the federal government's share declined while the shares of provincial and local governments increased.
- At the level of major industry groups, the most rapid growth occurred in financial and related services and in community, business, and personal services. At a more detailed level, the fastest growth of all was recorded by the computer service industry – 18 per cent per year between 1971 and 1986.
- Age and sex distributions differ markedly among industries.
- While there is a high degree of diversity across industries in any given year, there is considerable stability over time in their age distributions relative to the overall distribution: industries with younger-than-average work forces tend to remain that way, and similarly for those with older-than-average work forces.
  - At the same time there is a tendency for rapidly growing industries to shift towards younger age distributions and slowly growing or declining industries to shift towards older distributions.
  - A service industry of particular interest is education, in which employment went from a considerable over-representation of younger teachers and under-representation of older ones in 1971 to just the opposite in 1986, in consequence of the passage of the baby boom generation through the system.
- Women's employment has become increasingly concentrated in service industries.
  - The service sector's share of female employment went from 71 per cent in 1971 to 81 per cent in 1986.
- Employed women are younger, on average, than employed men, but the gap has narrowed.
- Although the 1971-86 period was one of substantial social and economic change there was considerable stability in the male/female proportions of workers in the various industries.
- The tendency towards gender concentration greatly exceeds the tendency towards age concentration.

- The self-employed (persons working for themselves plus "unpaid family workers") are quite different from others in some important respects.

  - There was a sharp decline in their numbers between 1971 and 1981, followed by a partial recovery between 1981 and 1986.

  - Older workers are more likely to be self-employed than younger ones, and men more likely than women; men accounted for more than two-thirds of all self-employment in 1986.

  - Self-employment represented 7.7 per cent of all employment in 1986; in agriculture, about three out of every five were self-employed.

- A taxonomy of the demographic characteristics of industries supports the view that there is a much greater concentration of female than of male employment.

  - Of the 264 industries identified in the census data, the 10 per cent (26 industries) with the highest concentrations of women in 1986 accounted for 15.5 per cent of all female employment; the 10 per cent (27 industries) with the highest male concentrations accounted for only 2.4 per cent of all male employment.

  - Industries that had mostly female workers in 1971 typically had mostly female workers in 1986.

  - Even so, the economy absorbed the 77 per cent increase in female employment between 1971 and 1986 in such a way that not only the levels but also the proportions of women increased in almost all industries.

  - The stability of gender concentration across industries is greater than the stability of age concentrations which, in turn, is much greater than the stability of growth rates; there was no strong tendency for industries to maintain their relative rates of employment growth in moving from the 1971-81 period to 1981-86.

The occupational dimension of employment was considered in Part III. The chief findings can be summarized as follows.

- Traditional "white collar" employment grew from 53 to 61 per cent of the total over the period 1971-86; correspondingly, there was below-average growth in traditional "blue collar" occupations, and their share of employment fell to less than one-third.

- The highest status occupations (managerial, professional, semi-professional and technicians) accounted for 15 per cent of employment in 1971, 20 per cent in 1986.

- The fastest growth was in management occupations.

  - The percentage of Canadian employment in high-level management jobs more than doubled between 1971 and 1986.

  - Growth in middle management was also considerable, but less rapid.

- Distinctive age distributions are found among the occupations, even at high levels of aggregation, and those distributions persisted over the period 1971-86.

  - There is greater differentiation according to age among occupations than among industries.

  - As with industries, the baby boom generation tended to disperse across occupations in such a way as to maintain relative age structures; however, the tendency to maintain age structures was greater for occupations, which suggests that to some extent industries reacted to the baby boom by changing their occupational composition.

- Professional, semi-professional and technical occupations appear to have spurned the baby boom.

  - During the 1980s those occupations aged moderately while the average age of the overall Canadian work force fell.

  - The most important change affecting their age structure was an increase in the average age of entry.

- Farming occupations have particularly interesting age distributions.

  - Owner/operators have a very high average age whereas farm labourers have a very low one.

  - This pattern held over the fifteen-year period.

- For men the rather high correlations between mean age and socioeconomic rankings of occupations suggest career sequences from lower to higher occupations.

- Women do not show such a pattern: high mean ages are found at various levels of the socioeconomic hierarchy, suggesting that the work world is presented less often to women than to men as an orderly career sequence.

- Managerial and supervisory jobs continue to be held more frequently by men than by women, but the successive censuses provide evidence of a weakening of this historical pattern.

- Within the clerical, sales, and service category, older women are found relatively more frequently in unskilled occupations and younger women relatively more frequently in the skilled and semi-skilled ones.

- Occupations are more variable in their demographic characteristics than are industries.

- As in the case of industries, occupations showed little consistency in their rates of growth between the 1971-81 and 1981-86 periods.

- As in the case of industries again, gender concentration among occupations exceeded age concentration by a wide margin.

- The census data convey a dominant impression of considerable persistence in the occupational patterns of women despite the rapid growth in their labour force participation.

    - About half of the jobs held by women were in the clerical, sales, and service occupations in all three census years.

    - While there continues to be a high degree of sex segregation there is also evidence of a modest decline over the 1971-86 period.

In sum, then, our analysis has been concerned with the age and sex distribution and other characteristics of employment. The period on which we have concentrated attention included the entry into the labour force of the well-educated baby boom generation and the concurrent and sustained increase in women's participation. We have found strong, systematic links between the overall age distribution of employment and the population from which workers are drawn. We have found also that typical industries and occupations have responded to the major demographic changes by maintaining their own distinctive age structures, not in an absolute sense, but relative to the overall structure. In that way the increased employment associated with the baby boom generation has been widely dispersed across industries and occupations. There was a similar response to the increase in female employment: almost all industries and occupations had higher proportions of women workers in 1986 than in 1971, but the absorption took place in such a way as to maintain heavy concentrations of women in relatively few areas of employment.

The underlying dynamic adjustment processes that have lead to such outcomes are beyond the scope of our study. Rather, we have focused on the outcomes themselves, but have noted the substantial flexibility in labour market responses that have been necessary to bring them about. It is clear that many factors have been at work to reconcile the continuously changing conditions on the demand and supply sides of the labour market.

While we have not attempted to identify the separate supply and demand effects, in the course of work on this study we have been impressed with the overall magnitude of labour market adjustments that occurred between 1971 and 1986. In large measure the adjustments were no doubt made in response to changing economic and demographic circumstances, including especially the influx of large numbers of women workers and "baby boomers."

During the 1971-86 period of rapid adjustment, as during others, those who sought work, whether new entrants to the labour force or workers wishing to change jobs, would naturally have searched where the prospects seemed best. Obviously, more of them would have ended up in expanding industries and occupations and fewer in those that were contracting. Employers, on the other hand, would have looked as far afield as necessary to fill their job openings. Presumably they would have looked first to their traditional pools of workers – young women, older men, teenagers, or whatever other group they might have drawn from previously. If unsuccessful, they would then have been more likely to take in workers from non-traditional sources.

A shortfall in traditional sources of supply can provide opportunities for workers who might have been overlooked in other circumstances. We have in mind, for example, the increasing tendency for some employers to hire older workers in an apparent response to the smaller numbers of youthful ones available. As another example, the sharp increase in the numbers of managerial and supervisory personnel that we have documented has undoubtedly facilitated the recent flows of women into such occupations, but the increase in the supply of women with appropriate post-secondary training has itself been a necessary precondition. Thus developments on both the demand and supply sides of the market were important.

While most adjustments occur without particular reference to government policy interventions, there is no doubt that such interventions can influence the course of events. Our analysis gives little in the way of specific policy guidance, but there are some observations that can be made relating to the problems associated with demographic changes.

We have noted the high concentrations of female workers in some industries and occupations, and of males in others. Such concentrations constitute problems wherever they reflect social attitudes that preclude women or men from holding particular types of jobs. This problem has two aspects. For an individual, it means possible exclusion from more highly paid employment. For society, it means a sacrifice of national product if some workers are precluded from working at jobs for which they are qualified. Seen in this way, the gender typing of industries and occupations that has resulted in a heavy and increasing concentration of women in the service industries – four out of every five women in 1986, compared to one out of every three men – and a heavy though decreasing concentration of men in the primary industries, manufacturing, and construction, might be viewed with concern.

The problems associated with the age composition of employment are less clear but still important. As we have documented, certain industries and occupations have heavy concentrations of older workers. Those in industries that happened also to be in decline would sometimes have difficulty finding alternative employment, but just how difficult would depend on the particular circumstance of the workers affected – how well educated or

skilled they were, how willing to move, either geographically or in terms of industry or occupation, and so on – and also on the general economic conditions in the areas where they happened to live.

Industries and occupations that previously had heavy concentrations of younger workers may have problems too. Faced with the prospect of smaller numbers of young workers, and ones who may be able to command higher wages than before because of their relative scarcity, such industries and occupations may find it necessary to economize on the use of labour, especially youthful labour.

Finally, there may be problems associated with the increased proportions of workers in their middle years. By middle age, those following a career path would expect to have been promoted to positions of greater responsibility and higher incomes. (Based on historical experience, such expectations would perhaps have been more common among men than among women.) Yet their numbers alone reduce the prospects for promotion, as we have noted. In such circumstances there may be reason to worry about the maintenance of employee morale.

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DISCUSSION PAPERS **JUNE 28, 1991**

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1987		The papers numbered 87.A.0 to 87.A.12 were prepared in connection with phase one of Health and Welfare Canada's Review of Demography and its implications for Economic and Social Policy (The Demographic Review).	
	87.A.0	Demographic Change and the Canadian Economy: An Overview - S.B. Seward	$5.00
	87.A.1	Some Observations on Demography in Selected Macroeconometric Models of Canada - R.G. Bodkin & K. Marwah	$5.00
	87.A.2	Population Change and the Canadian Economy: A Survey of the Issues - F.T. Denton & B.G. Spencer	$5.00
	87.A.3	Population Change and the Future Labour Force: A Discussion Paper - F.T. Denton & B.G. Spencer	$5.00
	87.A.4	Population Aging and Government Deficits in Canada - D.K. Foot	$5.00
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	87.A.8	L'avenir démographique du Canada et les groupes linguistiques - R. Lachapelle	$5.00
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